

SONY®

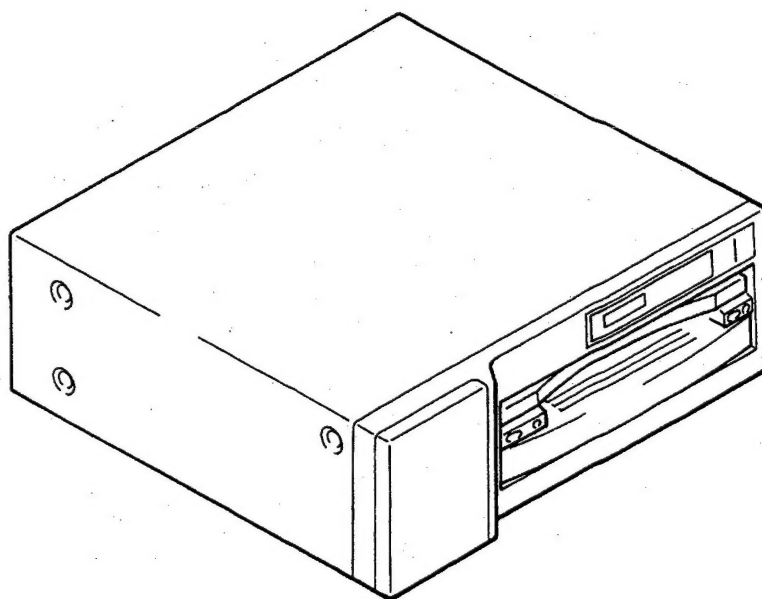
DIGITAL COLOR PRINTER

UP-D8800

UPK-8800SC

UPK-8801

SERVICE MANUAL



SAFETY RELATED COMPONENT WARNING

Components identified by shading and Δ marked on the schematic diagrams and parts list are critical to safe operation. Replace these components with SONY parts whose part numbers appear as shown in this manual or in supplements published by SONY.

CONTENTS

<u>Section</u>	<u>Page</u>	<u>Section</u>	<u>Page</u>
1. GENERAL		6. ELECTRICAL PARTS LIST	91
1-1. Specifications.....	5	7. MECHANICAL OPERATION	
1-2. System Overview.....	6	7-1. Motor.....	100
1-3. Location and Function of Parts and Controls.....	6	7-2. Timing of Mechanical Operation.....	100
1-4. Precautions.....	7	7-3. Mechanical Section Outline.....	102
1-5. Connection.....	8	7-4. Position and Function for Sensor.....	103
1-6. Before Printing.....	9	7-5. Printing Operation Description.....	104
1-7. Printing.....	11	7-6. Timing for Bar Code Detection.....	110
1-8. Setting the Print Quantity.....	12	8. CIRCUIT OPERATION DESCRIPTION	
1-9. Adjusting the Printouts.....	13	8-1. SY-12 Board, MEC-2 Board Circuit Operation Description.....	111
1-10. Ink Ribbon and Print Paper.....	14	8-1-1. System Control Section.....	112
1-11. Troubleshooting.....	14	8-1-2. Mechanism Control Section.....	116
2. DISASSEMBLY		8-1-3. Thermal Head Control Section.....	122
2-1. Removing the Accessories.....	16	8-1-4. Port Map.....	124
2-2. Removing the Front Panel Assy.....	16	8-1-5. Relation of Error Indicating Each Sensor.....	130
2-3. Removing the Mechanical Main Unit.....	17	9. SERVICE MODE	
2-4. Removing the Rear Panel.....	17	9-1. Service Mode.....	133
2-5. Removing the Switching Regulator.....	18	9-1-1. Construction.....	133
2-6. Removing the Diaphragm Assy.....	18	9-1-2. Entering Method.....	133
2-7. Removing the Fan.....	19	9-1-3. Content.....	133
2-8. Removing the MEC-2 board, Top Plate, and Corner (T).....	19	9-2. Adjust Mode.....	142
2-9. Removing the Stepping Motor.....	20	9-2-1. Construction.....	142
2-10. Removing the DC Motor Assy (Motor Bracket (K) Assy).....	20	9-2-2. Entering Method.....	142
2-11. Removing the DC Motor Assy (Motor Bracket (T) Assy).....	21	9-2-3. Content.....	143
2-12. Removing the Head Drive Shaft Assy.....	21	9-3. FMY Printing.....	144
2-13. Removing the Head Guide Assy.....	22	9-4. Reset of Each Kind Establishment Value.....	145
2-14. Removing the Ribbon Guide Assy and Thermal Head Assy.....	22	9-5. Process Order When Replacing Each Part.....	146
2-15. Removing the Optional Boards (IF-33 and FMY-15 boards).....	23	9-5-1. When Thermal Head Replacing.....	146
3. DIAGRAMS		9-5-2. When Replacing EEPROM or MEC-2 Board.....	147
3-1. Circuit Boards Location.....	24	9-5-3. When Replacing Bar Code, Ribbon Code and OHP Sensors.....	147
3-2. Overall Block Diagram.....	26	9-6. Note on the Unit TRANSPORTATION.....	147
3-3. System Control Block Diagram.....	29	10. TROUBLE SHOOTING	
3-4. Mecha Control Block Diagram.....	32	10-1. Mechanism Section.....	148
4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS		10-2. Electrical Section.....	150
4-1. Frame Schematic Diagrams.....	35		
4-2. Printed Wiring Boards and Schematic Diagrams.....	39		
4-3. Semiconductors.....	65		
5. EXPLODED VIEWS			
5-1. Front Panel, Cabinet Section.....	79		
5-2. Rear Panel, Chassis Section.....	81		
5-3. Mechanism Section (1).....	83		
5-4. Mechanism Section (2).....	85		
5-5. Mechanism Section (3).....	87		
5-6. Mechanism Section (4).....	89		

CONTENTS

<u>Section</u>	<u>Page</u>	<u>Section</u>	<u>Page</u>
UPK-8800SC		UPK-8801	
1. GENERAL		1. GENERAL	
1-1. Specifications.....	159	1-1. Overview.....	235
1-2. About the SCSI Interface Kit.....	160	1-2. Installation	235
1-3. Kit Contents.....	160	1-3. Specifications.....	235
1-4. Installing the Boards	161		
1-5. Setting the DIP Switch.....	161	2. DIAGRAMS	
1-6. Connecting the Computer	162	2-1. Add-on Memory Block Diagram	236
1-7. Before Using the Macintosh Software	162		
1-8. Chooser Level Driver.....	163	3. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS	
1-9. Photoshop Plug-in Module Operation.....	166	3-1. Printed Wiring Boards and Schematic Diagrams	237
1-10. Before Using the Windows Software	169		
1-11. Chooser Level Driver.....	170	4. EXPLODED VIEW	
1-12. Photoshop Plug-in Module Operation.....	181	4-1. UPK-8801 (Option).....	240
1-13. Troubleshooting.....	186		
2. DIAGRAMS		5. ELECTRICAL PARTS LIST	241
2-1. SCSI Interface Block Diagram	188		
2-2. Frame Memory Block Diagram	191		
3. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS			
3-1. Printed Wiring Boards and Schematic Diagrams	194		
4. EXPLODED VIEW			
4-1. UPK-8800SC (Option)	216		
5. ELECTRICAL PARTS LIST	217		
6. CIRCUIT OPERATION DESCRIPTION			
6-1. IF-33 Board Circuit Operation			
Description	220		
6-1-1. Outline.....	220		
6-1-2. CPU Peripheral	221		
6-1-3. SPC Peripheral	222		
6-1-4. Double Buffer Peripheral.....	223		
6-2. FMY-15 Board Circuit Operation			
Description	224		
6-2-1. Outline.....	224		
6-2-2. CPU Peripheral Section	224		
6-2-3. Memory Peripheral Section	225		
6-2-4. Picture Data Receiving from IF-33 Board.....	226		
6-2-5. Picture Data Transmission to IF-33 Board.....	227		
6-2-6. Printing Data Transmission to SY-12 Board	228		

SECTION 1 GENERAL

This section is extracted
from instruction manual.

1-1. SPECIFICATIONS

Power requirements	120V AC, 50/60Hz (UC) 220 to 240V AC, 50/60Hz (EK)
Power consumption	Maximum 270 W (UC) Maximum 260 W (EK)
Operating temperatures	5°C to 35°C
Dimensions	Approx. 493.8 × 176 × 468.8 mm (w/h/d) (19 1/2 × 7 × 18 1/2 inches)
Mass	Approx. 18 kg. (39 lb. 11 oz)
Printing system	Dye transfer sublimation thermal printing
Thermal head	2,560 elements, 11.8 dot/mm (300dpi)
Gradations	256 levels each for yellow, magenta and cyan
Picture size	Maximum 297 × 215.9 mm(w/h) (11 3/4 × 8 1/2 inches)
Picture elements	Maximum 3,508 × 2,550 dots (w/h)
Printing time	Approx. 80 seconds per page for color printing (300dpi) (UC) Approx. 85 seconds per page for color printing (300dpi) (EK) Approx. 125 seconds per page for OHP printing (300dpi) (UC) Approx. 130 seconds per page for OHP printing (300dpi) (EK)
Picture memory	10 Mbytes (4,096 × 2,560 × 8 bits) with the SCSI Interface Kit UPK-8800SC (not supplied) installed 30 Mbytes (4,096 × 2,560 × 3 × 8 bits) with the Add-on Memory Kit UPK-8801 (not supplied) installed to the SCSI Interface Kit UPK-8800SC
Interface	SCSI-1 channel (amphenol 50-pin connector × 2) with the SCSI Interface Kit UPK-8800SC (not supplied) installed
Ink ribbon/Print paper	Color Printing Pack UPC-8811 (UC) Color Printing Pack UPC-8810 (EK) OHP Printing Pack UPC-8831 (UC) OHP Printing Pack UPC-8830 (EK)
Accessories supplied	Ink ribbon holder (1) Paper tray (1) Paper cover(1) AC power cord (1) Instructions for use (1) Warranty card (1) (UC)

Design and specifications are subject to change without notice.

1-2. SYSTEM OVERVIEW

The Sony UP-D8800 digital color printer is designed to reproduce computer images on letter-size print paper or OHP films.

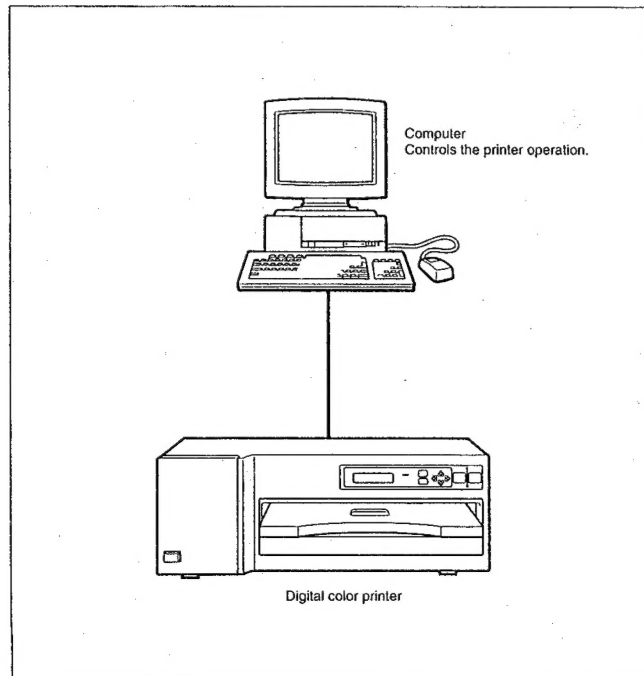
By installing the SCSI Interface Kit UPK-8800SC (not supplied) to the expansion slots of the printer, you can print out image data of MS-Windows or Macintosh graphics application software in high resolution (300dpi/150dpi) and 256 shades of gray or in full color (16,700,000 colors). With the Add-on Memory Kit UPK-8801 installed to the UPK-8800SC, you can expand the printer memory to store an image for printing at once.

The Color Connectivity Controller P881* (not supplied), when installed to the printer expansion slot, makes the printer to fully support the PostScript™, a page-description language widely used by computers, printers, and imagesetters.

* The Color Connectivity Controller P881 is available from TopMax Corporation.

System Configuration

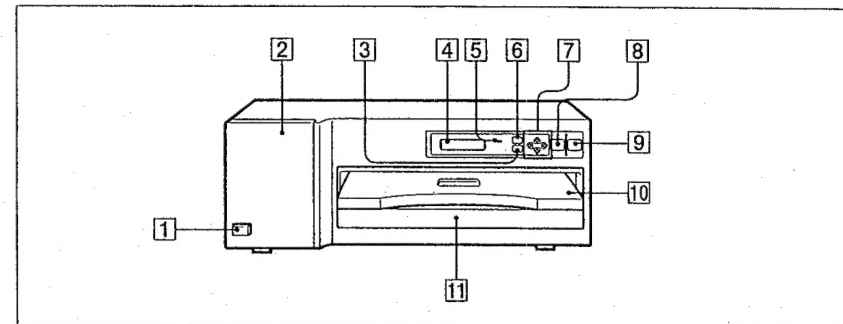
The following shows an example printer system configuration.



1-3. LOCATION AND FUNCTION OF PARTS AND CONTROLS

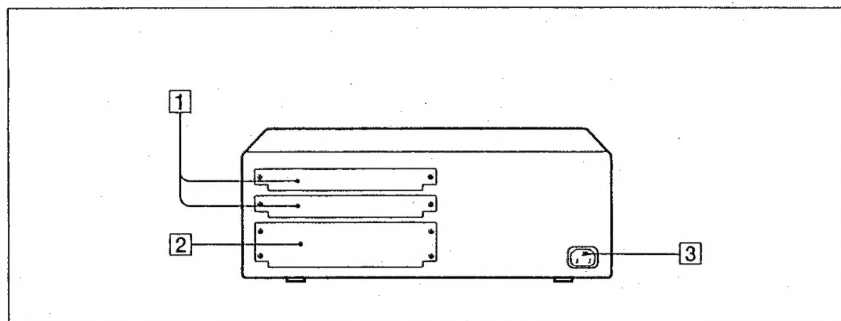
For details, refer to the pages indicated in parentheses.

Front



- | | |
|--|--|
| <p>1 POWER switch
Press to turn the printer on or off.</p> <p>2 Ribbon door (13)
Press the PUSH indicator to open the ribbon door to load an ink ribbon cassette.</p> <p>3 PRINT QTY (quantity) button (19)
Press this button to display or quit the print quantity setting menu in the printer window display.</p> <p>4 Printer window display (17)
Displays status messages, error messages, printout adjust and print quantity setting menus, and other printing indications.</p> <p>5 ALARM indicator (24)
Lights in orange when the ink ribbon or print paper is exhausted, the paper jams, or another problem occurs.</p> <p>6 MENU button (20)
Press this button to display or quit the printout adjust menu in the printer window display.</p> <p>7 Cursor control buttons (19)
Use these buttons to increase or decrease a value and level shown on the menu, or scroll up and down through a menu.</p> | <p>8 STOP button (18)
Press this button to stop printing part-way.</p> <p>9 PRINT button (17)
Press this button to print the image data stored in the memory of the printer.</p> <p>10 Paper cover (11)
Printouts are ejected here.</p> <p>11 Paper tray (15)
Load print paper here.</p> |
|--|--|

Rear



- 1 Expansion slots for SCSI Interface Kits (1 and 2) (11)**
Remove the cover and insert the SCSI Interface board (not supplied) and memory board (not supplied) here.
- 2 Expansion slot for Color Connectivity Controller (11)**
Remove the cover and insert the Color Connectivity Controller P881 (not supplied) here.
- 3 ~AC IN connector (12)**
Used to connect to a wall outlet, using the AC power cord supplied.

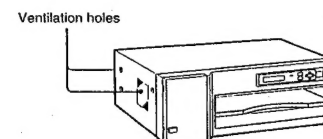
1-4. PRECAUTIONS

Safety

- Operate the printer on 120V AC, 50/60 Hz power supply only.
- Be careful not to damage the power cable by placing or dropping heavy objects on it; it is dangerous to use the unit with a damaged power cable.
- If you do not intend to use the unit for a long time, disconnect the power cable.
- Unplug the power cable by grasping the plug, not the cable itself.
- Do not disassemble the unit.
- Do not remove the cover. There is a danger of electric shock from the internal parts.
- Be careful not to spill water or other liquids on the unit, or to allow combustible or metallic material to enter the cabinet. If used with foreign matter in the cabinet, the unit is liable to fail, or present a risk of fire or electric shock.
- If the unit malfunctions or if a foreign body falls into the cabinet, disconnect the power immediately and consult your Sony service facility or your Sony dealer.
- When transporting the printer, turn on the power and press the STOP, < and > buttons together to lock the thermal head. Then turn off the power. Remove the ink ribbon cassette and paper tray from the printer.

Installation

- Avoid placing the unit in a location subject to:
 - mechanical vibration
 - high humidity
 - excessive dust
 - direct or excessive sunlight
 - extremely high or low temperatures
- Ventilation holes are provided to prevent the unit from overheating. Be careful not to obstruct them with other units or by covering the unit with a cloth etc.



On condensation

- If the printer is subjected to wide and sudden changes in temperature, such as when it is moved from a cold room to a warm room or when it is left in a room with a heater that tends to produce large amounts of moisture, condensation may form inside the printer. In such cases the printer will probably not work properly, and may even develop a fault if you persist in using it. If moisture condensation forms, turn off the power and leave the printer to stand for at least one hour.

1-5. CONNECTION

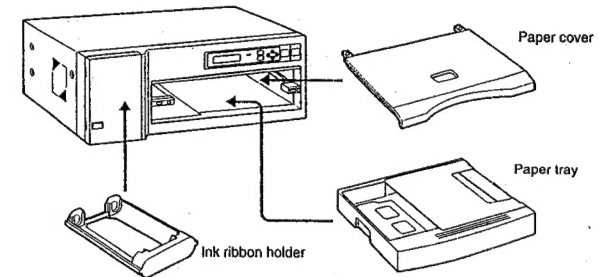
- If the printing pack is subjected to wide and sudden changes in temperature, condensation may form on the ink ribbon or paper inside. This will cause the printer to malfunction. Also if the printing pack is used in this state, spots are likely to appear on the printout.
- To store a half-used printing pack, replace it in its original packing and reseal the package. If possible, keep the sealed printing pack in a cool, dark location. To subsequently use the printing pack, place it, in its sealed package, in a warm room for several hours. Doing so prevents condensation from forming when the printing pack is removed from its package.

Cleaning

Clean the cabinet, panel and controls with a soft dry cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzene, which may damage the finish.

Assembly

Mount the supplied ink ribbon holder, paper tray and paper cover.



Installing the Expansion Boards

Connect the SCSI Interface Kit or/and Color Connectivity Controller to the expansion slots of the printer. Through the expansion boards, you can connect the computer to control the printer and supply image data for printing. For details, refer to the operating instructions of the expansion boards you are using.

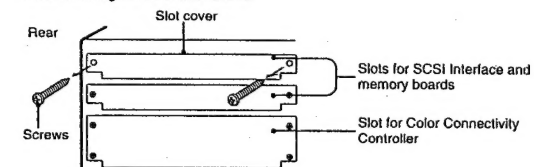
Notes

When connecting

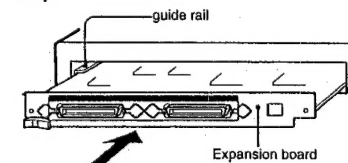
- Turn off the power of the printer and the computer before attempting to make any connections.
- Connect the AC power cord last.

- 1 Remove the screws at both sides of the cover of the expansion slot to which you are installing the expansion board.

When installing the SCSI Interface Kit



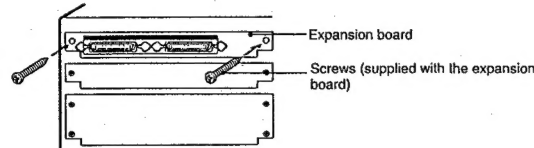
- 2 Insert the expansion board along the guide rail of the expansion slot until it stops.



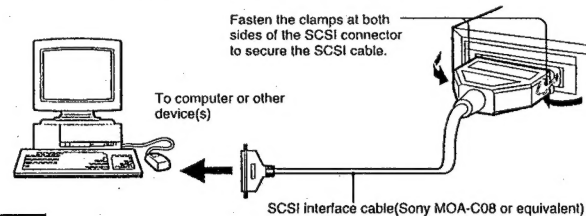
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1-6. BEFORE PRINTING

- 3 Fix the expansion board with the screws supplied with the board.



- 4 Make necessary settings (for example the setting of the SCSI ID DIP switch), and connect the computer or other peripherals to the printer. For necessary setting, refer to the operating instructions of the expansion kit.

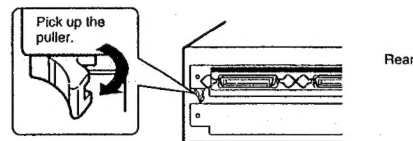


Note

The type of the connecting cable differs with the computer or the device. For the details, refer to the operating instructions of the device you are using.

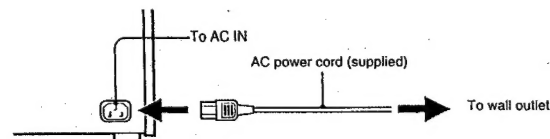
Removing the Expansion Board

To remove the expansion board, follow the reversed steps for attaching the board. When you pull out the board, pick up the puller of the board.



Connecting the AC Power Cord

Connect the supplied AC power cord to the AC IN connector on the rear of the printer and then connect the cord to the wall outlet.



Note

Operate the printer only on 120 V AC 50/60 Hz.

This section describes the operations that must be performed prior to starting printing. This explanation assumes that the printer has already been installed and that all connections have been made.

- Loading an ink ribbon cassette (page 13)
- Loading the print paper (page 15)

Once these operations have been completed, there should be no need to perform them again during routine printing.

Notes

- Use the ink ribbon suitable for the type of print material. Before attempting to load an ink ribbon, make sure that the combination of the ribbon and paper is compatible. ("Ink Ribbon and Print Paper" on page 23) If the printer detects an incompatible combination, an error message appears in the printer window display and you cannot make printouts.
- Use only ink ribbon and print paper for this printer. If you use a different type, the printer may not print properly or malfunction.

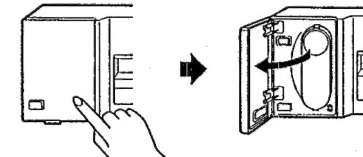
Loading an Ink Ribbon Cassette

Load the ink ribbon to the supplied ink ribbon holder, and load the ink ribbon cassette (referring to the ink ribbon holder loaded with the ink ribbon) to the printer's ribbon compartment.

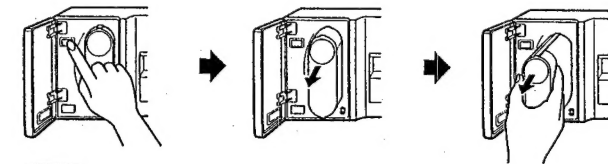
Note

When replacing ink ribbon, do not turn off the power. If you turn off the power, the image data stored in the memory will be lost.

- 1 Push PUSH on the ribbon door. The ribbon door opens.



- 2 Remove the ink ribbon cassette by pulling down the EJECT lever. The ink ribbon cassette pops out.



Note

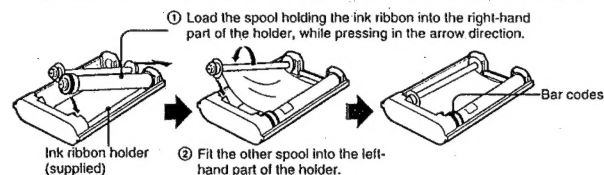
Never put your hand into the ink ribbon compartment. The thermal head becomes very hot. You may burn yourself if you touch it.

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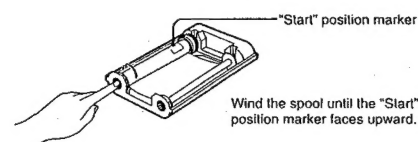
- 3 Detach the used ink ribbon from the ink ribbon holder.



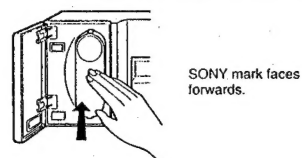
- 4 Take off the seal of the ink ribbon and load the ink ribbon to the ink ribbon holder. The printer can detect the type of ink ribbon with the bar codes on the spool.



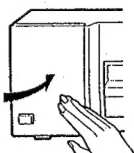
- 5 Remove any slack from the ink ribbon. If the ribbon is left slack, it may be crumpled and damaged when inserted.



- 6 Insert the ink ribbon cassette firmly until it stops.

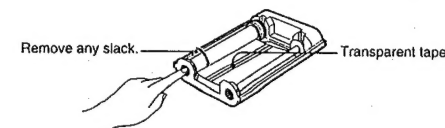


- 7 Close the ribbon door.



If your ink ribbon should tear

Repair the tear with transparent tape. There should be no problem with using the remaining portion of the ribbon.



Notes

When using ink ribbons

- Once an ink ribbon has been completely used, replace it. Ink ribbons are not re-usable.
- Do not touch the ink ribbon or place it in a dusty location. Finger prints or dust on ink ribbon will result in imperfect printing.

When storing ink ribbons

- Avoid placing the ink ribbon in a location subject to:
 - high temperatures
 - high humidity
 - excessive dust
 - direct sunlight
- Store partially used ink ribbon in its original package.

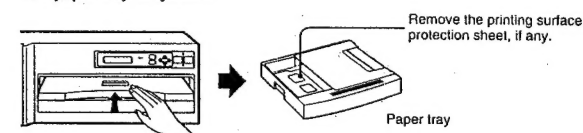
Loading the Print Paper

Load the print paper by the following procedure. Be careful not to touch the printing surface of the paper.

Note

When loading the print paper, do not turn off the power. If you turn off the power, the image data stored in the memory will be lost.

- 1 Push PUSH on the paper tray. The paper tray is ejected.

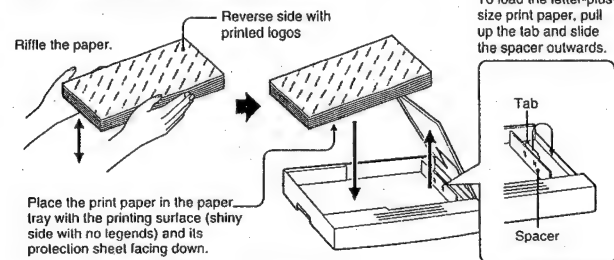


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1-7. PRINTING

- 2 Open the tray cover and place the print paper in the paper tray.

When placing the regular print paper



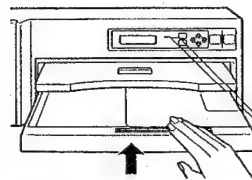
When placing the OHP transparencies

Place the transparencies with their M-shaped notch fitting to the mark M on the bottom of the paper tray.

Notes

- The paper tray holds up to 100 sheets of paper and transparencies. When you add paper to a partly-full tray, be careful that the total number of sheets does not exceed 100. If you exceed this limit, paper jams may occur.
- When you add paper to a partly-full tray, remove the printing surface protection sheet. Do not place different types of paper in the tray. If you do, paper jams may occur.
- Load the paper so that it lays flat in the paper tray. If the paper is curled, it will overflow the paper tray and the printing position may shift. If this happens, load fewer sheets in the paper tray.

- 3 Close the tray cover and slide the paper tray into the printer until it clicks into place.

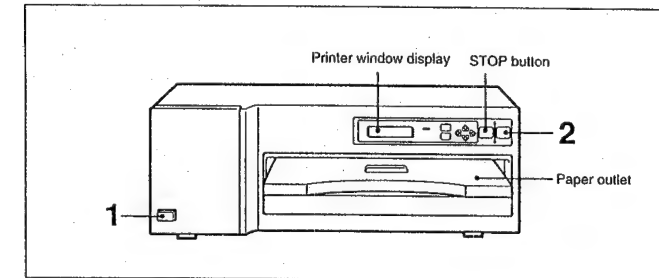


Notes

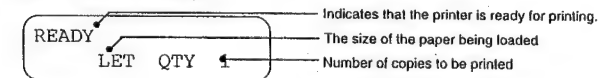
- When storing print paper
- Avoid storing the print paper in a location subject to:
 - high temperatures
 - high humidity
 - excessive dust
 - direct sunlight
 - Use the original package for storing unused paper.

Before printing

- Ensure that the printer is properly connected to the computer.
- Ensure that the ink ribbon cassette and print paper are properly loaded.



- 1 Turn on the power of the printer and computer.
When the printer is in standby status, the following message appears in the printer window display.

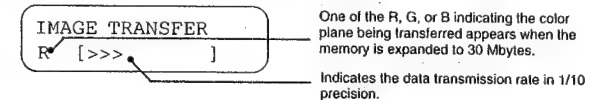


Notes

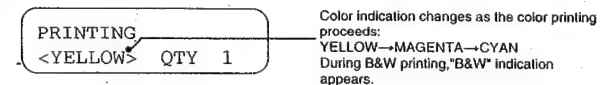
- When the printer is connected to the computer through the SCSI bus, turn on the power of the printer before turning on the computer.
- Never turn the printer on or off while the computer is accessing its hard disk, floppy disk or another SCSI device.

- 2 Send the image data from the computer to the printer, then enter the print command or press the PRINT button of the printer.
You can print an image either in 300dpi or 150dpi. For the details, refer to the instruction manual of the printer driver software you are using.

- ① While the printer is receiving the image data from the computer, the following message appears:
The data is written in the memory of the printer.



- ② The stored image data is printed as soon as the print command is entered from the computer or the PRINT button of the printer is pressed.



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1-8. SETTING THE PRINT QUANTITY

- ③ It takes about 80 (UC), 85 (EK) seconds for a 300dpi color printout (60 seconds for 150dpi) and 60 seconds for a 300dpi black and white printout (40 seconds for 150dpi) to emerge from the paper outlet. Once printing has been completed, the printer returns to standby status.

READY
LET QTY 1

Notes

- Do not pull the paper out till the printer finishes printing.
- To prevent paper jamming, do not allow more than 20 printouts on the paper cover.

To stop receiving the data or to stop printing midway

Press the STOP button. Data reception is abandoned midway and the printer is reset to standby status. When the printing is abandoned midway, the following message appears. After the print paper remained in the printer is ejected, the printer is reset to standby status.

PLEASE WAIT

To make a second copy of a printout

Execute the print menu of the computer again or press the PRINT button of the printer. The image data stored in the memory is printed again.

Note

When the memory is 10 Mbytes, you cannot make a second copy of a color image.

About memory

The image data sent from the computer is stored in the memory of the printer. When the SCSI Interface Kit (not supplied) is installed, the capacity of the memory is 10 Mbytes to store one color plane of a printout (3,508 × 2,550). When the add-on memory board (not supplied) is installed, you can expand the memory to 30 Mbytes to store the whole image (three color planes) of a printout.

If the printer does not print

The printer will fail to print in the following cases:

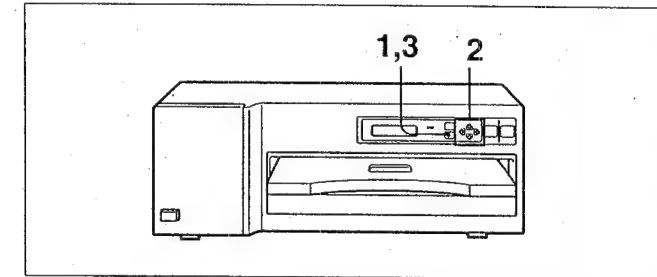
- An error message is displayed in the printer window display. Take remedies according to "Error Messages" on page 24.
- The image data stored in the memory is lost when you turn off the power. Execute the print menu again to send the data for printing.

Notes

When storing your printouts

- Avoid storing the printout in a location subject to high temperatures, high humidity, excessive dust and direct sunlight.
- Do not stick tape on a printout. Also avoid leaving a plastic eraser on a printout or placing a printout in contact with materials which contain plasticizer (under a desk mat, for example).
- Be sure not to leave the printed surface of an OHP transparency pressed against anything. The ink may come off onto the other surface.
- Do not allow alcohol or other volatile organic solvents to come into contact with the printouts.

You can set a print quantity value up to 20 before or during printing when the memory is expanded to 30 Mbytes.



- 1 Press the PRINT QTY button.

The print quantity setting menu is displayed in the printer window display.

PRINT QTY: 1
(COLOR 100)

Current setting
Number of printouts the remaining ribbon can afford.
Type of ink ribbon being loaded (COLOR, B&W, OHP)

- 2 Set the quantity with the < or > button.

> : The number increases.

< : The number decreases.

When you keep the button pressed, the number changes quickly.

PRINT QTY: 12
(COLOR 100)

Printing quantity changes.

- 3 To exit from the print quantity setting menu, press the PRINT QTY button again.

The printer window display returns to standby status and you can print the number of copies of the renewed setting.

READY
LET QTY 12

Renewed setting

When the print paper runs out during printing

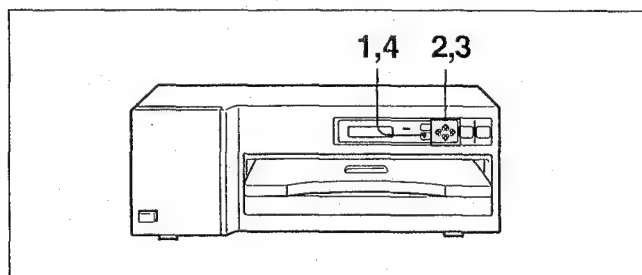
Load the print paper in the paper tray and press the PRINT button. The printer prints the remaining copies.

Notes

- When you turn off the power, the print quantity setting is reset to 1.
- You can also set the print quantity from the application software. The most recently set quantity remains effective until changed.
- The "QTY" value in the printer window display decreases each time one printout comes out to indicate the remaining copies to be printed.
- With the memory of 10 Mbytes, you can set the print quantity when printing black and white images.

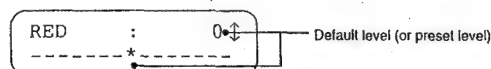
1-9. AJUSTING THE PRINTOUTS

You can adjust the picture quality of a printout with the MENU button before printing when the memory is expanded to 30 Mbytes. The most recent setting remains effective until changed.



1 Press the MENU button.

The first item of the printout adjust menu (for RED) appears in the printer window display. The default or preset level is shown both as a value and graphically.



2 Select the item for adjustment with the ^ or v button.

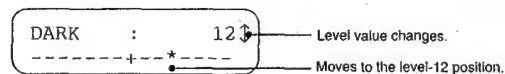
^: Scrolls up to the previous item.
v: Scrolls down to the next item.

3 Adjust the level with the < or > button.

You can adjust the level between -32 to +32. The center of the graph and the value 0 is the standard level. The sharpness can be adjusted among 4 levels: NONE (standard level)/LOW/MIDDLE/HIGH.

>: Increases the level.

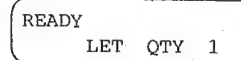
<: Decreases the level.



Adjustment Items		When you press >:
Color	RED	Red becomes stronger.
	GREEN	Green becomes stronger.
	BLUE	Blue becomes stronger.
Tone	DARK	Dark tone becomes stronger.
	LIGHT	Light tone becomes stronger.
Sharpness	SHARPNESS	The outlines become sharper.
Half tone	GAMMA	Half tone colors become stronger.

4 To exit from the printout adjust menu, press the MENU button again.

The printer returns to standby status.



Notes

- You can also adjust the printout picture quality from the application software. The most recently set values are effective until changed.
- The next printout is printed with the newly set values. You cannot adjust the color during printing.
- If you do not press any button for approximately 15 seconds after pressing the MENU button, the printer is automatically reset to standby status.

1-10. INK RIBBON AND PRINT PAPER

You need print paper and ink ribbon cassette for printing. ("Ink ribbon cassette" stands for the supplied ink ribbon holder loaded with ink ribbon.) Use the ink ribbon and print paper contained in the same package. If the printer detects an incompatible combination, an error message appears in the printer window display and you cannot make printouts.

UPC-8811 Color Printing Pack (UC)

UPC-8810 Color Printing Pack (EK)

Contains 100 sheets of print paper and 1 roll of color ink ribbon

UPC-8831 OHP Printing Pack (UC)

UPC-8830 OHP Printing Pack (EK)

Contains 100 OHP (overhead projector) transparencies and 1 roll of color ink ribbon

Notes

- Use only ink ribbon and print paper for this printer. If you use a different type, the printer may not print properly or malfunction.
- Ink ribbon and print paper are not re-usable. After you finish with them, replace them with new ones.

1-11. TROUBLESHOOTING

If a problem appears, check the following trouble shooting guide first and perform whatever action is necessary to solve the problem. If the problem persists, turn off the printer and consult with your nearest Sony service facility or your Sony dealer.

Symptom	Possible causes and remedies
Nothing appears in the printer window display.	The POWER switch of the printer is not set to ON. → Set the POWER switch of the printer to ON. If the power switch is set to ON, once set it to OFF, then to ON again.
	Connections may not be correct. → Make connections correctly. (page 11)
The printer does not print.	An error message appears on the printer window display. → Take remedies according to "Error Messages". (page 24)
	An ink ribbon cassette and print paper are not loaded. → Load an ink ribbon cassette and print paper. (pages 13 and 15)

Error Messages

If a problem occurs, the ALARM indicator lights and an error message stating the problem appears in the printer window display. Note the message and perform whatever action is necessary to solve the problem.

Error messages	Possible causes and remedies
IMAGE TOO LARGE	The size of the printout is set beyond the printing limits. → Adjust the printing size from the computer.
END OF RIBBON	The ink ribbon has been completely used. → Replace with the new ink ribbon. (Ink ribbons cannot be reused.)
HEAD IN COOLING	The thermal head has overheated. → Leave the printer until the head cools down and this message disappears.
HEAD IN HEATING	The thermal head is warming up. → Leave the printer until the head has warmed up and this message disappears.
NO RIBBON	Ink ribbon cassette is not fitted properly. → Ensure that the ink ribbon is loaded properly in the ink ribbon holder, and the ink ribbon cassette in the printer. (page 13)
NO IMAGE DATA	No image data is stored in the printer memory. → Transfer the image data from your computer. (page 17)
NO PAPER	The print paper has run out. → Load the print paper into the paper tray. (page 15)
PLEASE WAIT	When you press the STOP button or turn off the power while printing, or the printer detects an invalid combination of the print paper and ink ribbon and automatically stops printing, this message appears. → Wait for the printer to eject the paper.
REMOVE PAPER AND PRESS [→]	The print paper has jammed. → Remove jammed paper from the printer and press > button. (page 25)
RESERVED	The printer is reserved. All the buttons other than the STOP button are deactivated. → To activate the buttons, release the reservation of the printer from your computer.
RIBBON ERROR	The ink ribbon develops some trouble. → Ensure that the ink ribbon does not tear and is loaded properly. (page 13)
RIBBON & PAPER MISMATCH	The ink ribbon and print paper are not compatible. → Use a valid combination of print paper and ink ribbon. (page 23)

If the message remains displayed after you perform the remedies
Turn off the power once and then turn it on. The message will disappear and you can operate the printer.

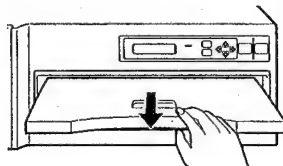
Serviceman Call Message

Error message	Meaning and remedies
MECHA TROUBLE	The printer cannot be operated any further. Turn off the power immediately and contact your Sony service facility or your Sony dealer.

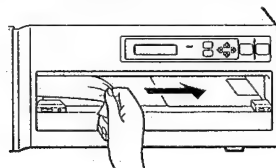
If the Paper Jams

If the paper jams, printing stops and the error message stating "REMOVE PAPER AND PRESS [→]" appears on the printer window display. Follow the steps below to remove the jammed paper.

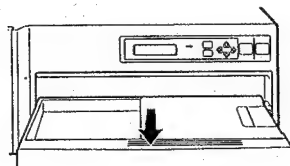
- 1 Remove the paper cover. If any printouts have been ejected on the paper cover, remove them first before removing the paper cover.



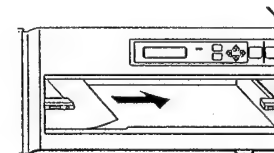
- 2 Check whether any paper is jammed inside the printer. If you find a jammed sheet, slowly pull it out straightly to the right.



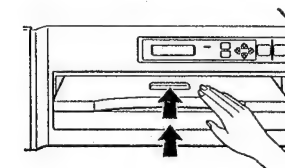
- 3 Push PUSH on the paper tray. The paper tray pops out.



- 4 Check whether any paper is found on the bottom of the printer. If you find one, remove it.

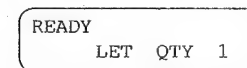


- 5 Ensure that the print paper is properly loaded. Discard the sheets removed in steps 2 and 4.
- 6 Reinsert the paper cover and paper tray into the printer.



- 7 Press the > button. The error message disappears and the printer returns to the standby status.

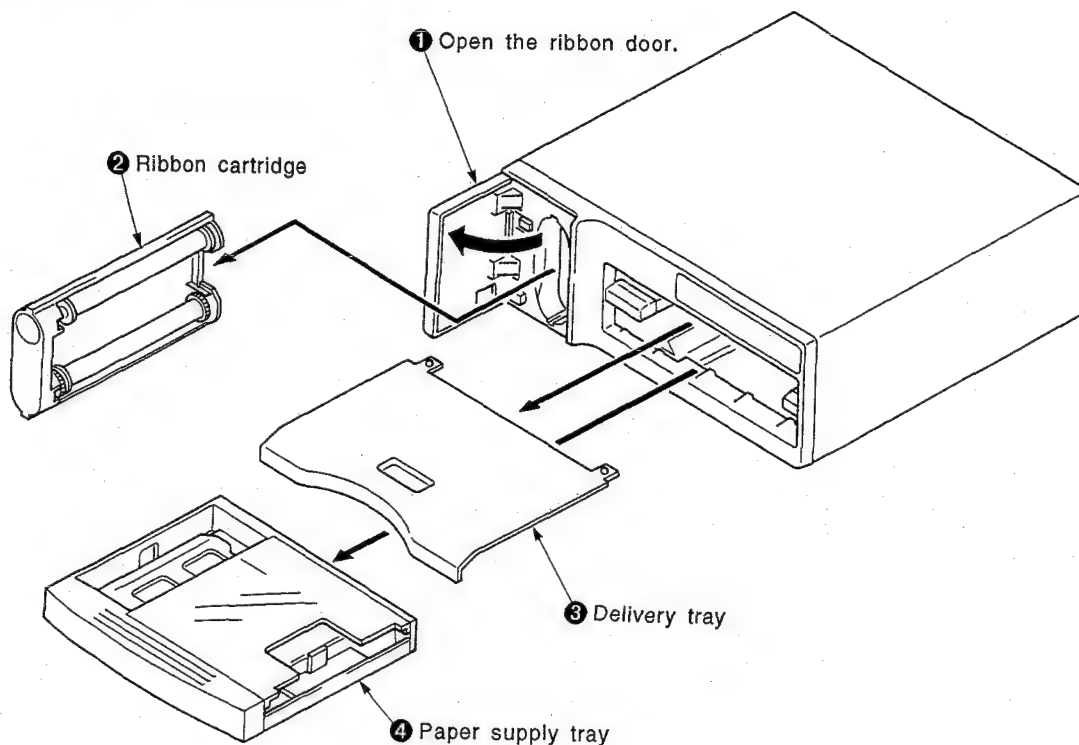
The printer window display



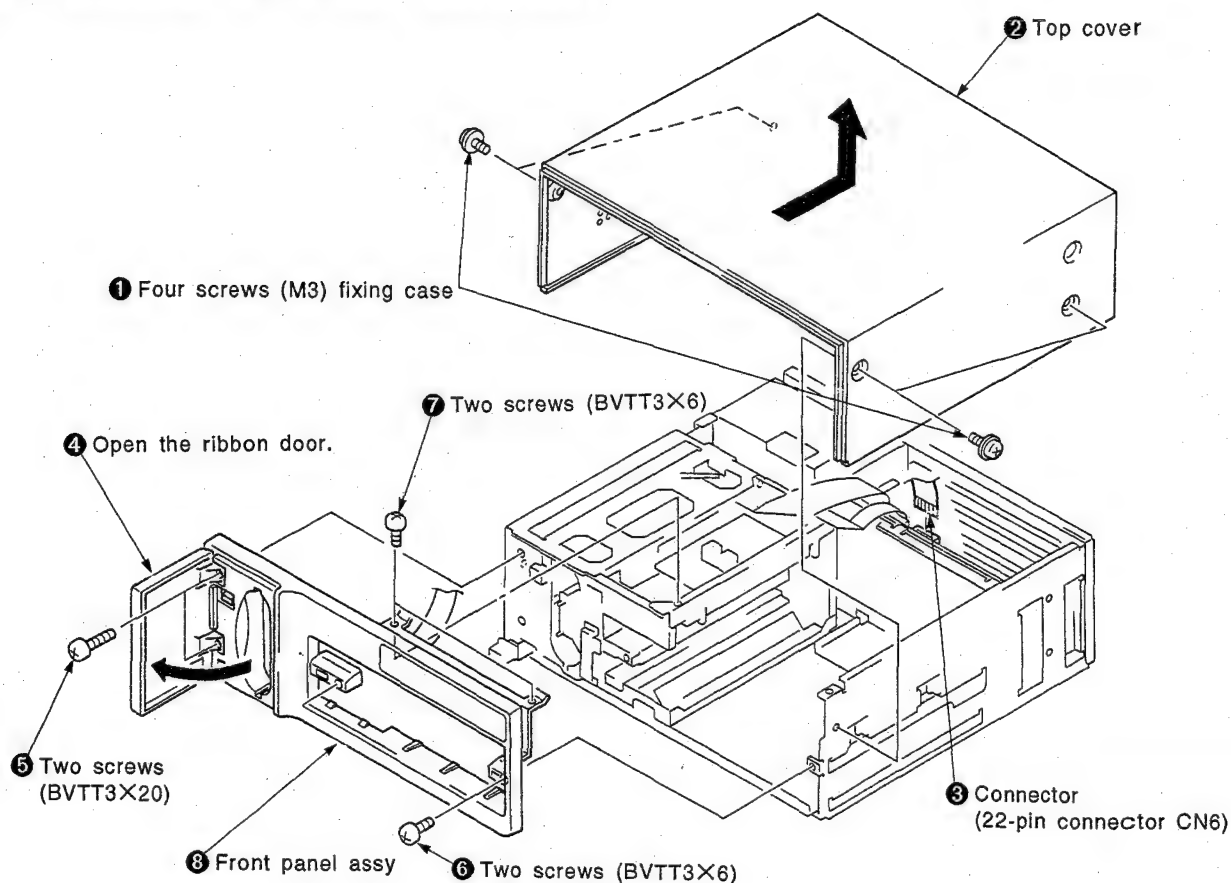
Continued to next page→

SECTION 2 DISASSEMBLY

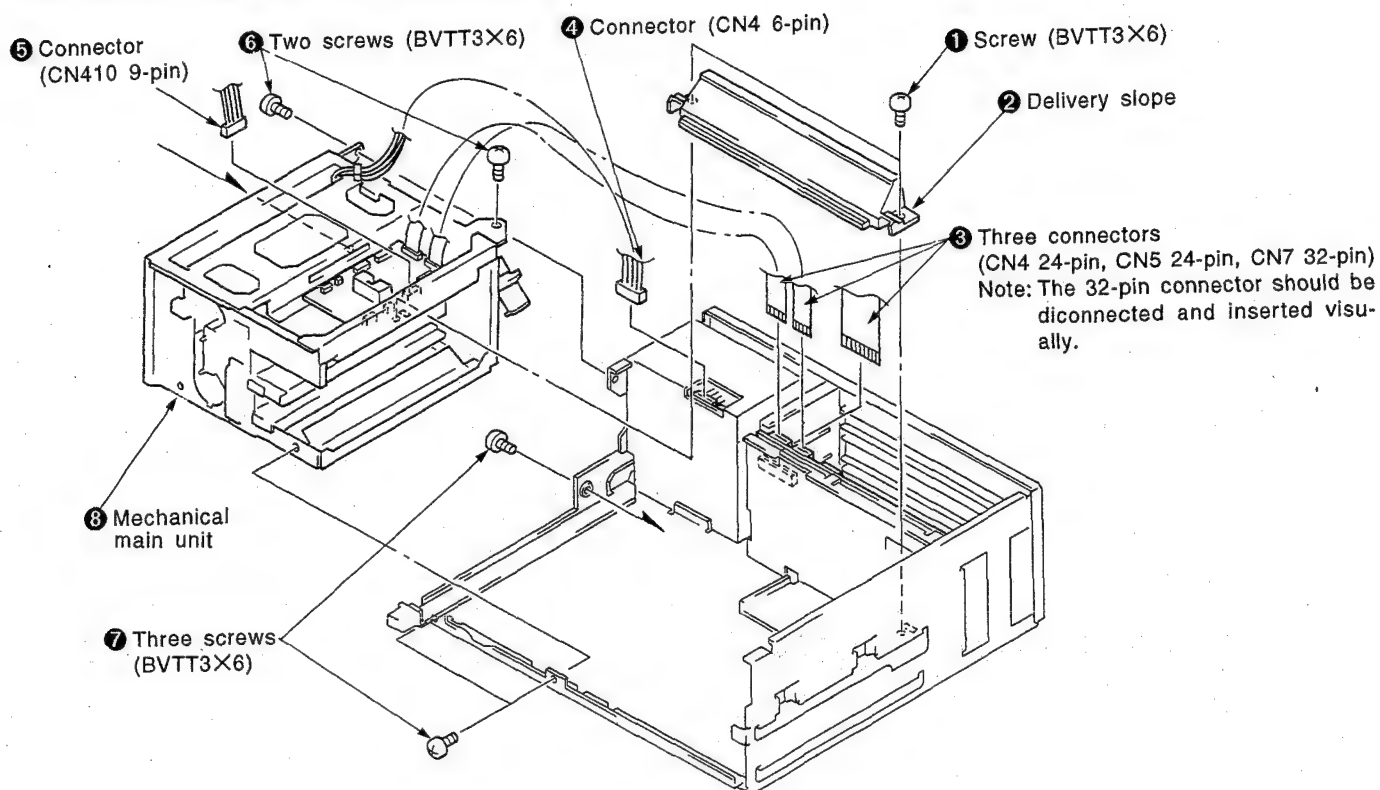
2-1. REMOVING THE ACCESSORIES



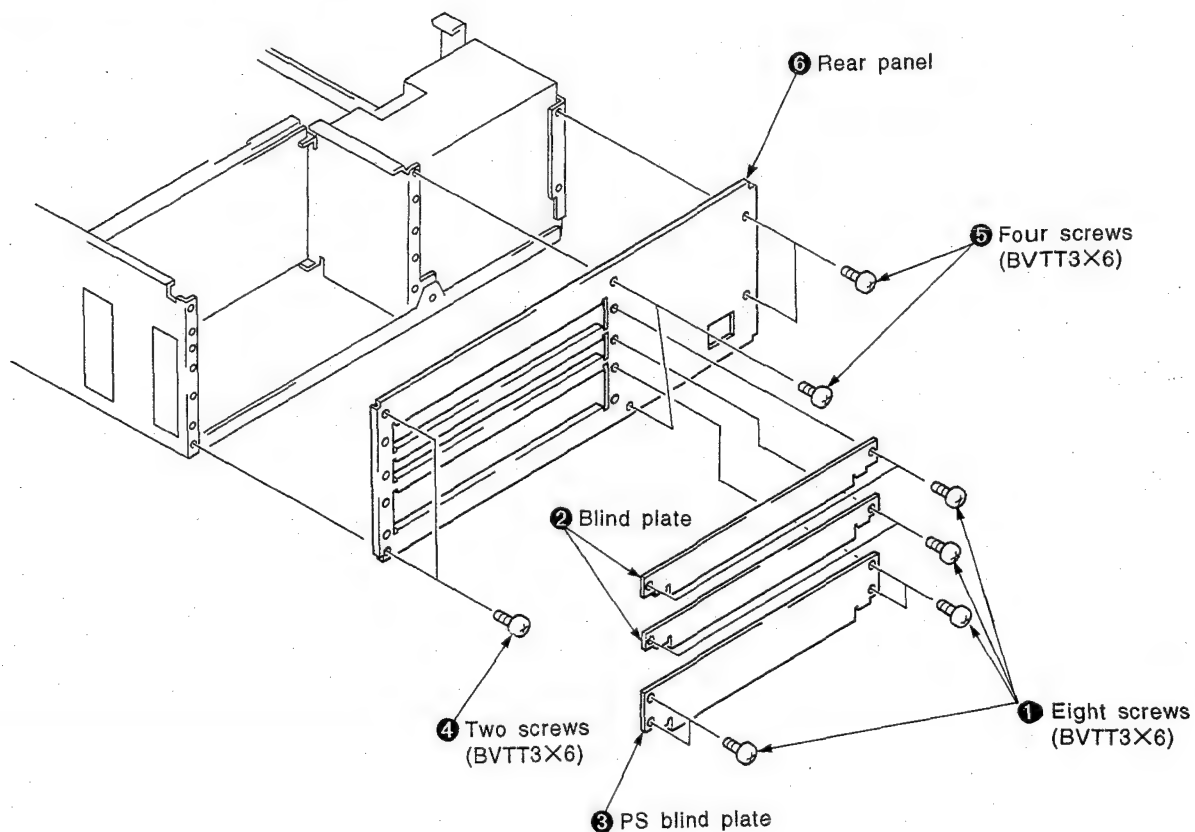
2-2. REMOVING THE FRONT PANEL ASSY



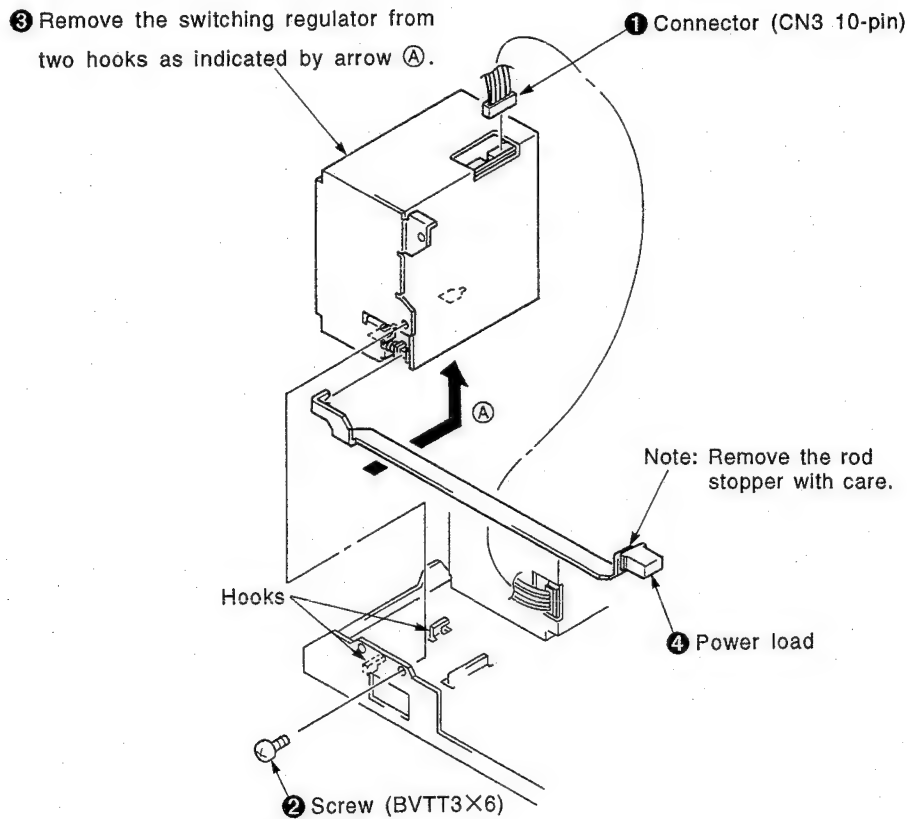
2-3. REMOVING THE MECHANICAL MAIN UNIT



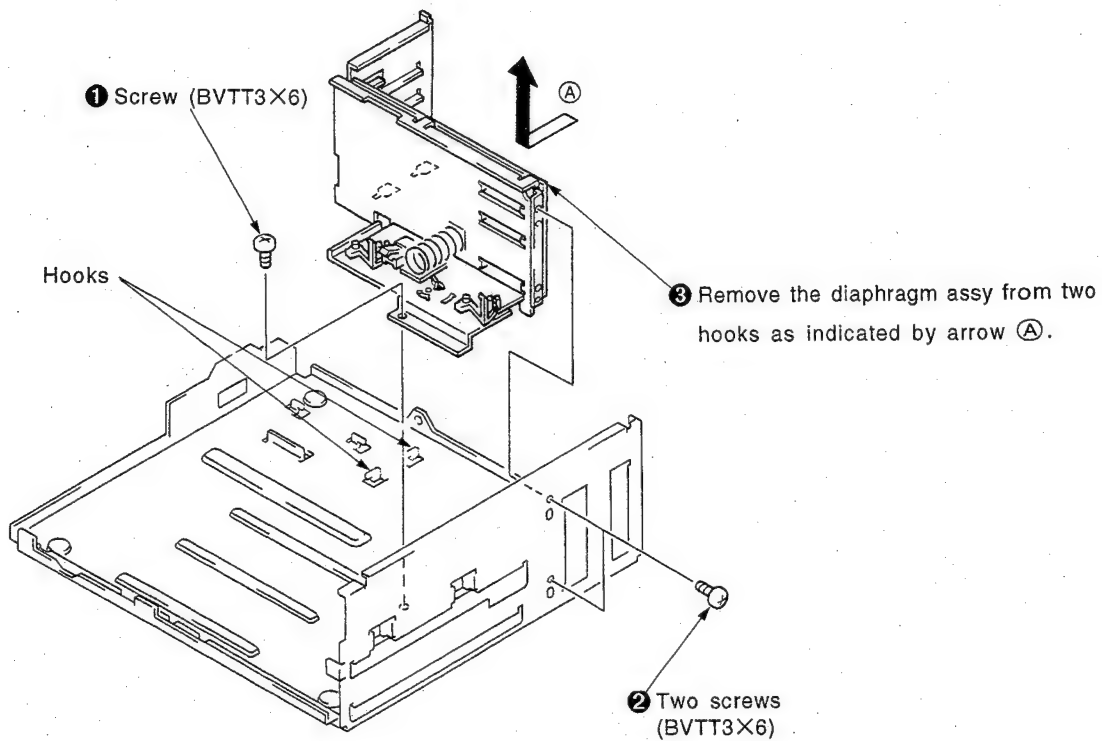
2-4. REMOVING THE REAR PANEL



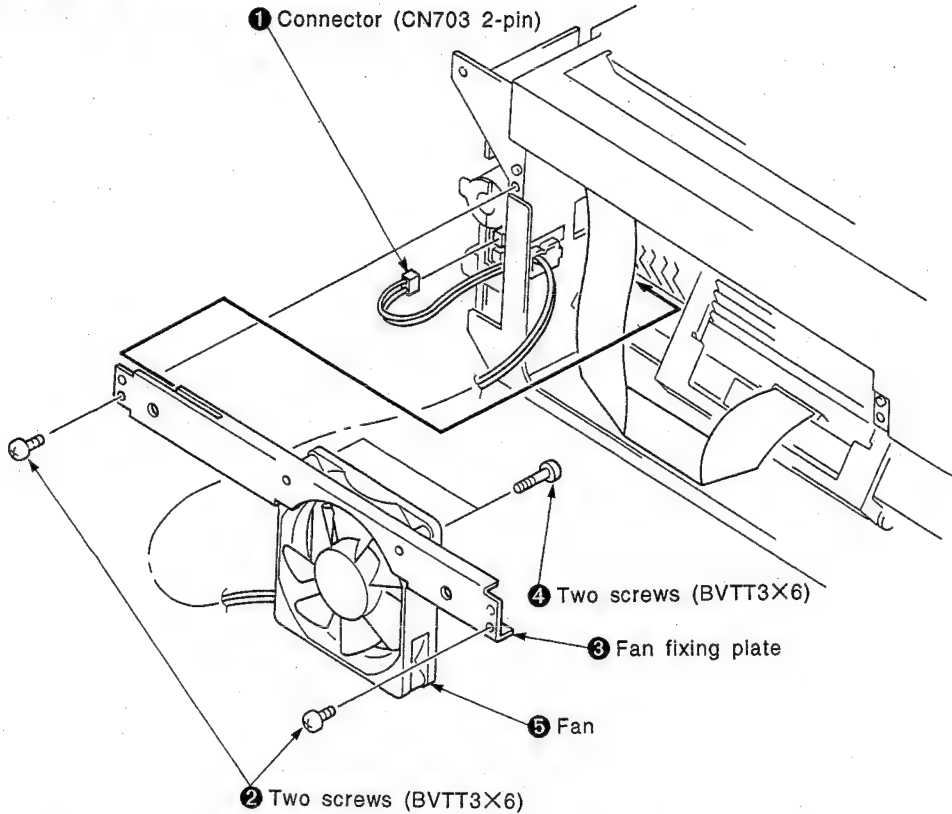
2-5. REMOVING THE SWITCHING REGULATOR



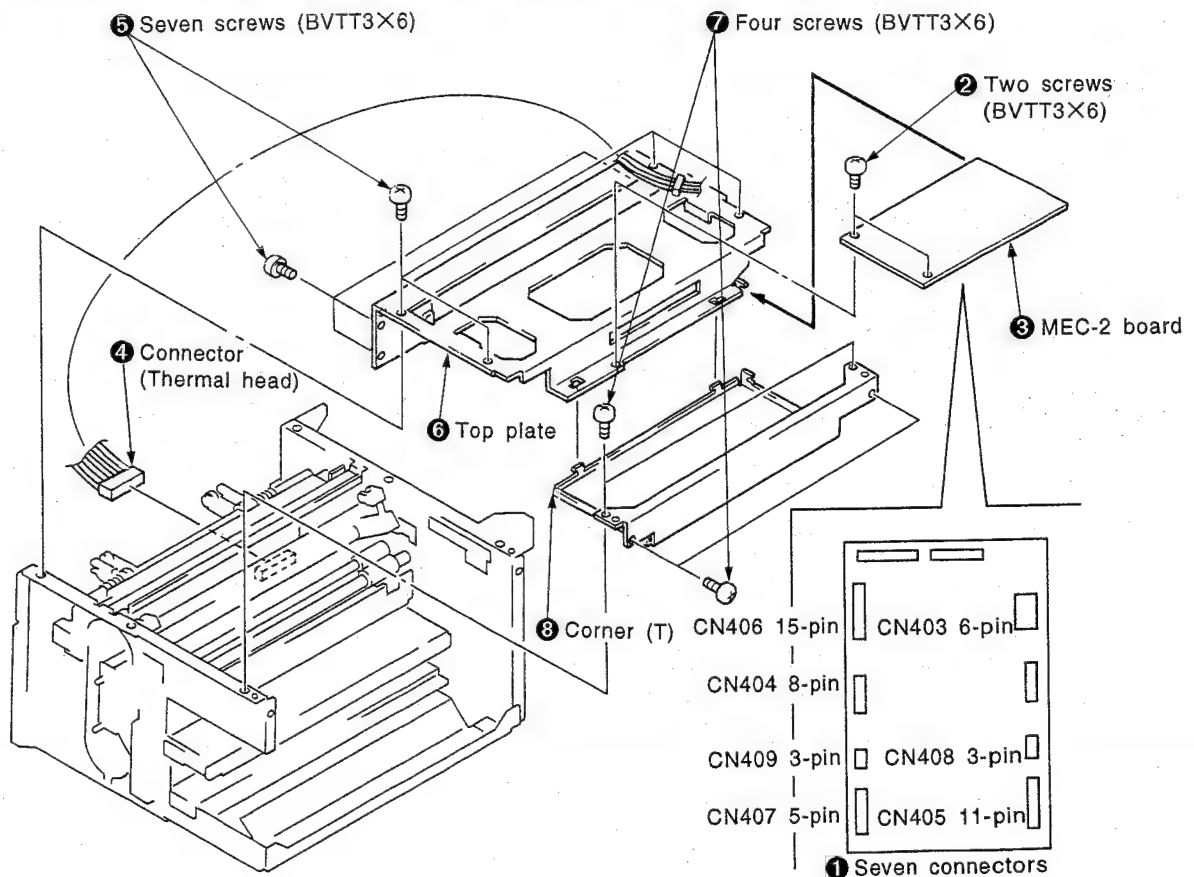
2-6. REMOVING THE DIAPHRAGM ASSY



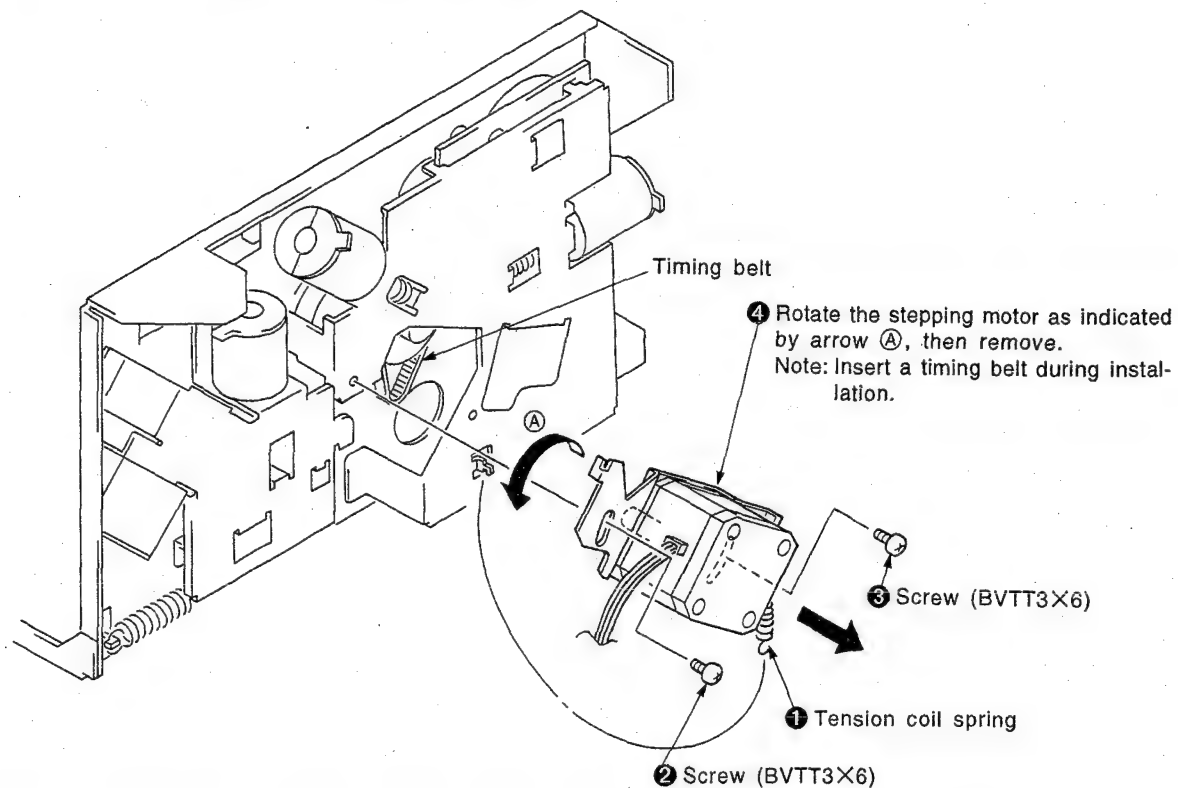
2-7. REMOVING THE FAN



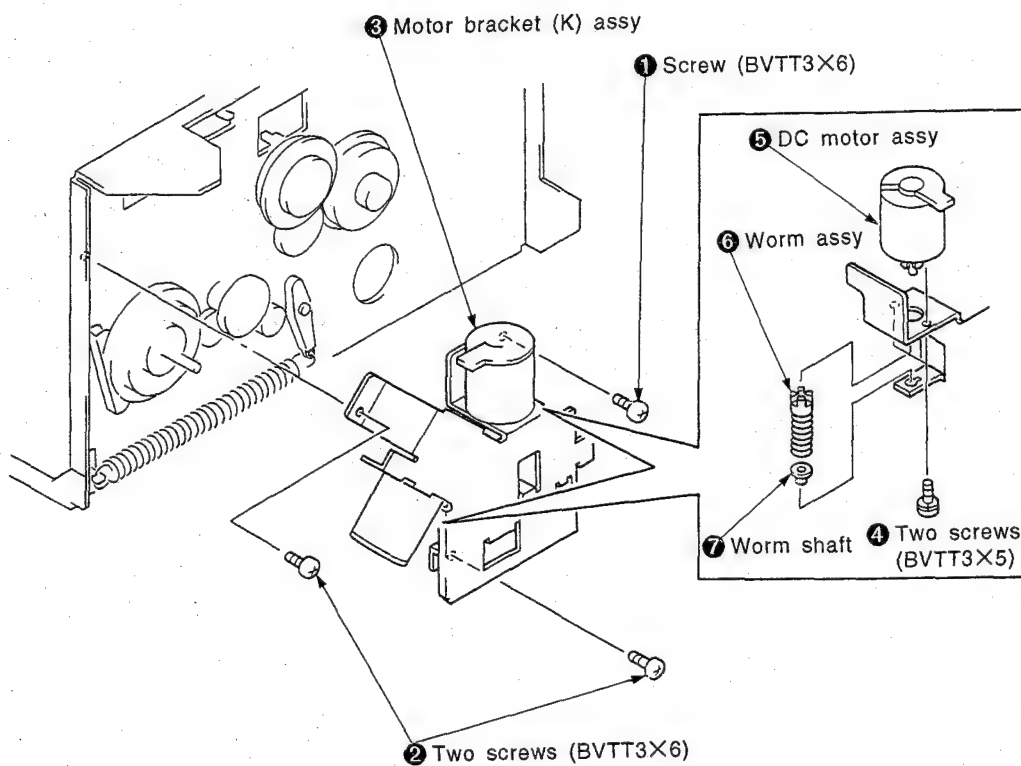
2-8. REMOVING THE MEC-2 BOARD, TOP PLATE, AND CORNER (T)



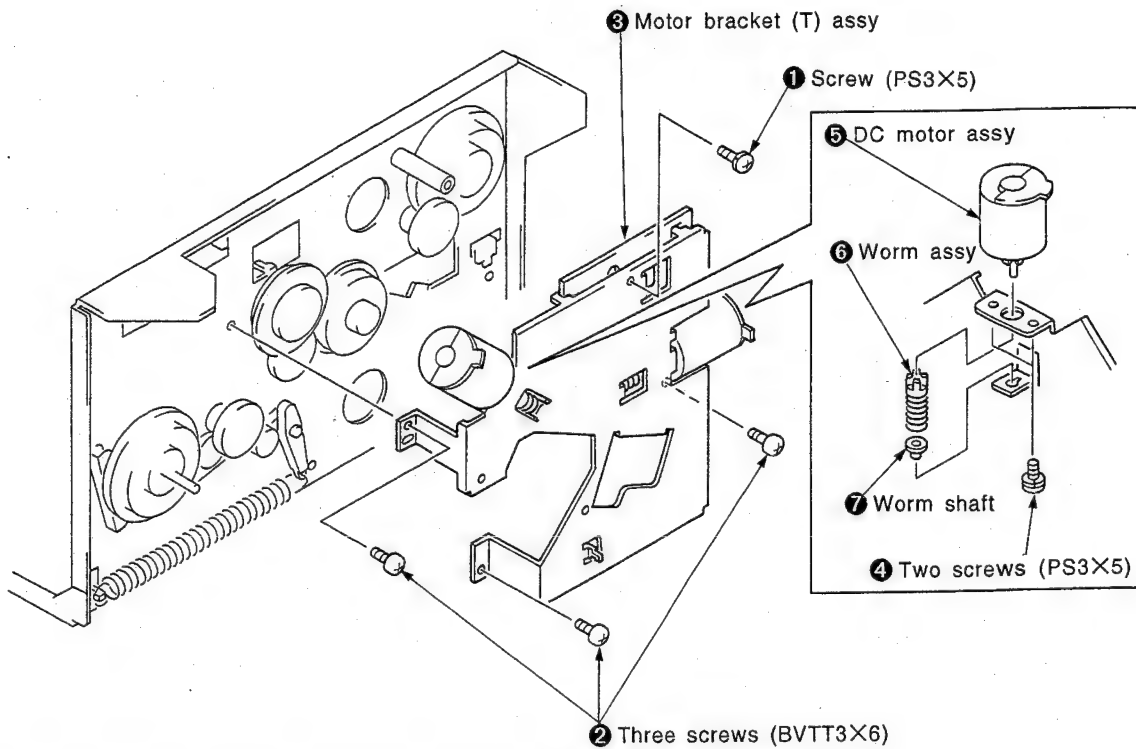
2-9. REMOVING THE STEPPING MOTOR



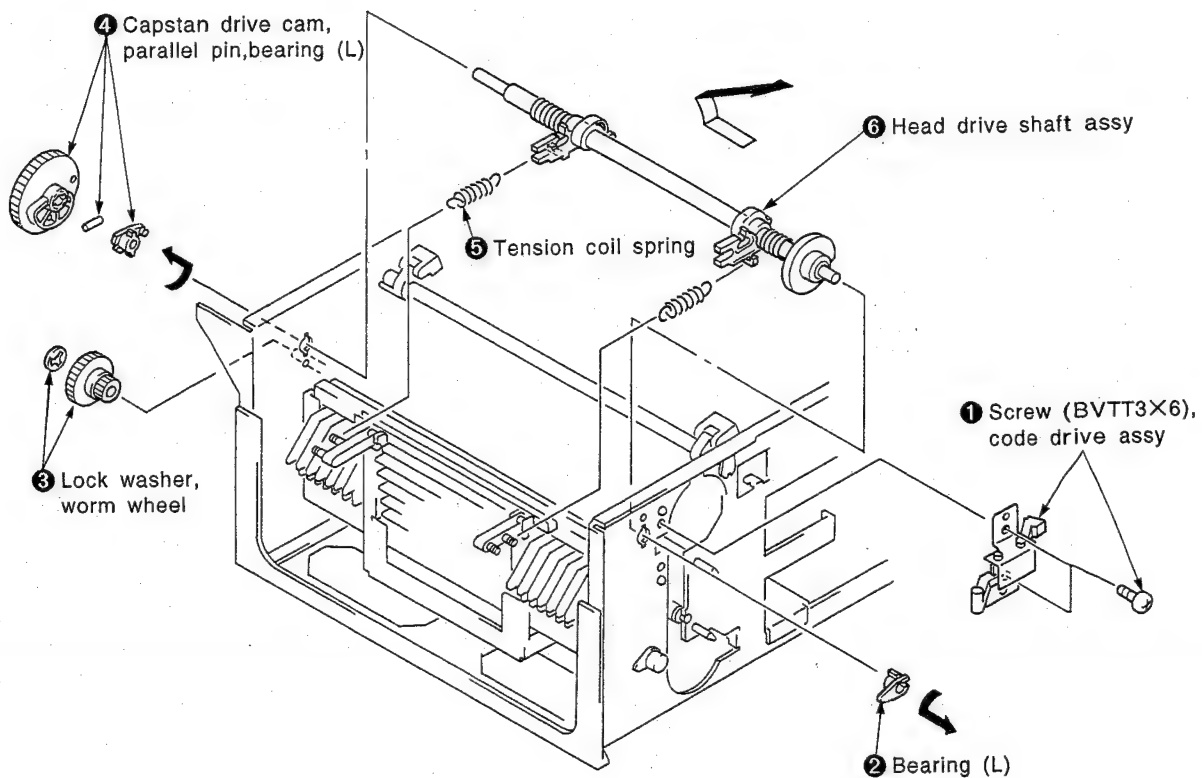
2-10. REMOVING THE DC MOTOR ASSY (MOTOR BRACKET (K) ASSY)



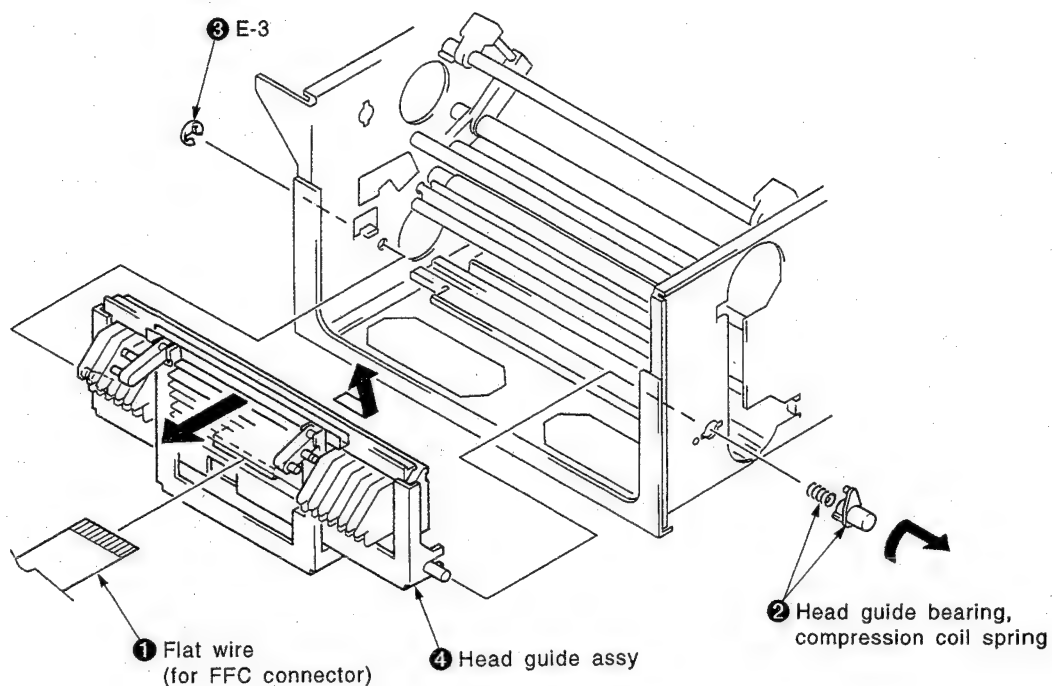
2-11. REMOVING THE DC MOTOR ASSY (MOTOR BRACKET (T) ASSY)



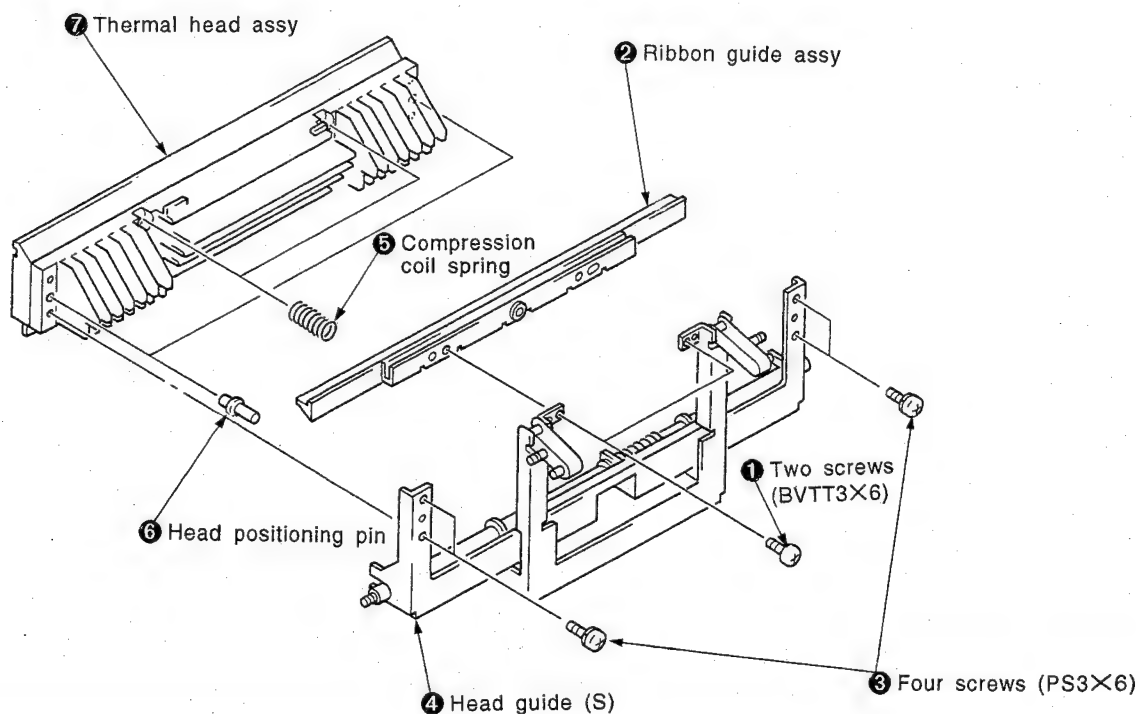
2-12. REMOVING THE HEAD DRIVE SHAFT ASSY



2-13. REMOVING THE HEAD GUIDE ASSY

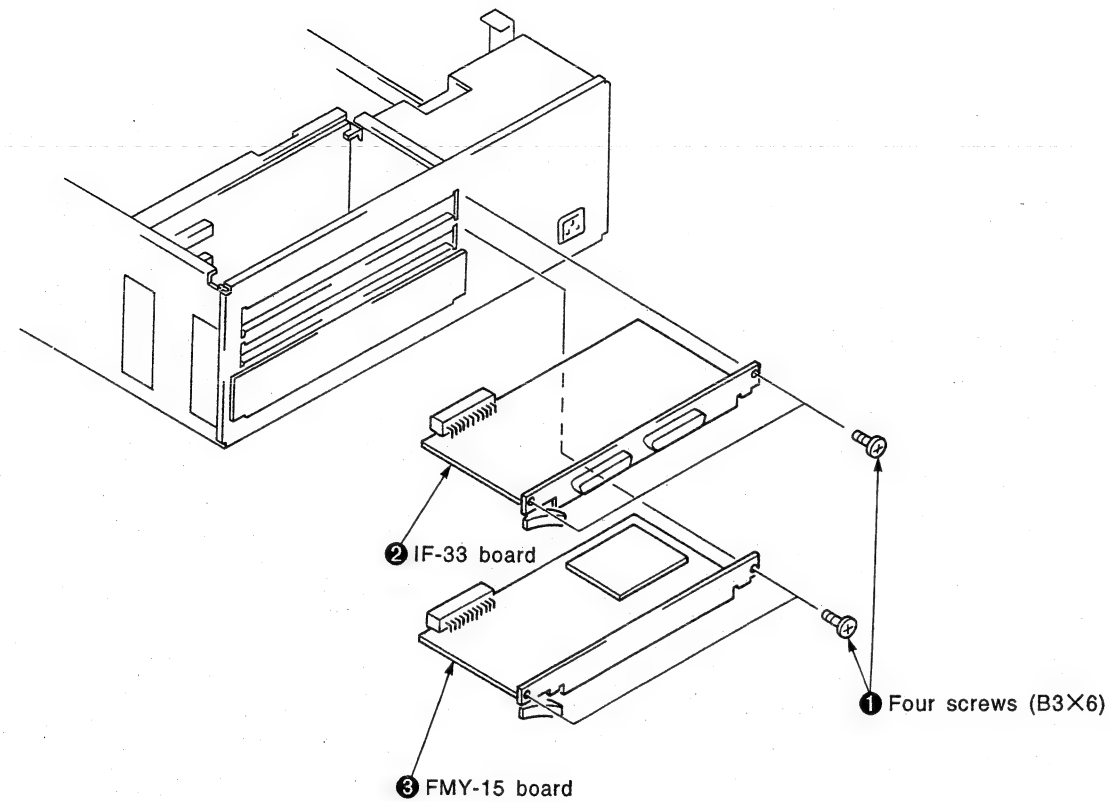


2-14. REMOVING THE RIBBON GUIDE ASSY AND THERMAL HEAD ASSY

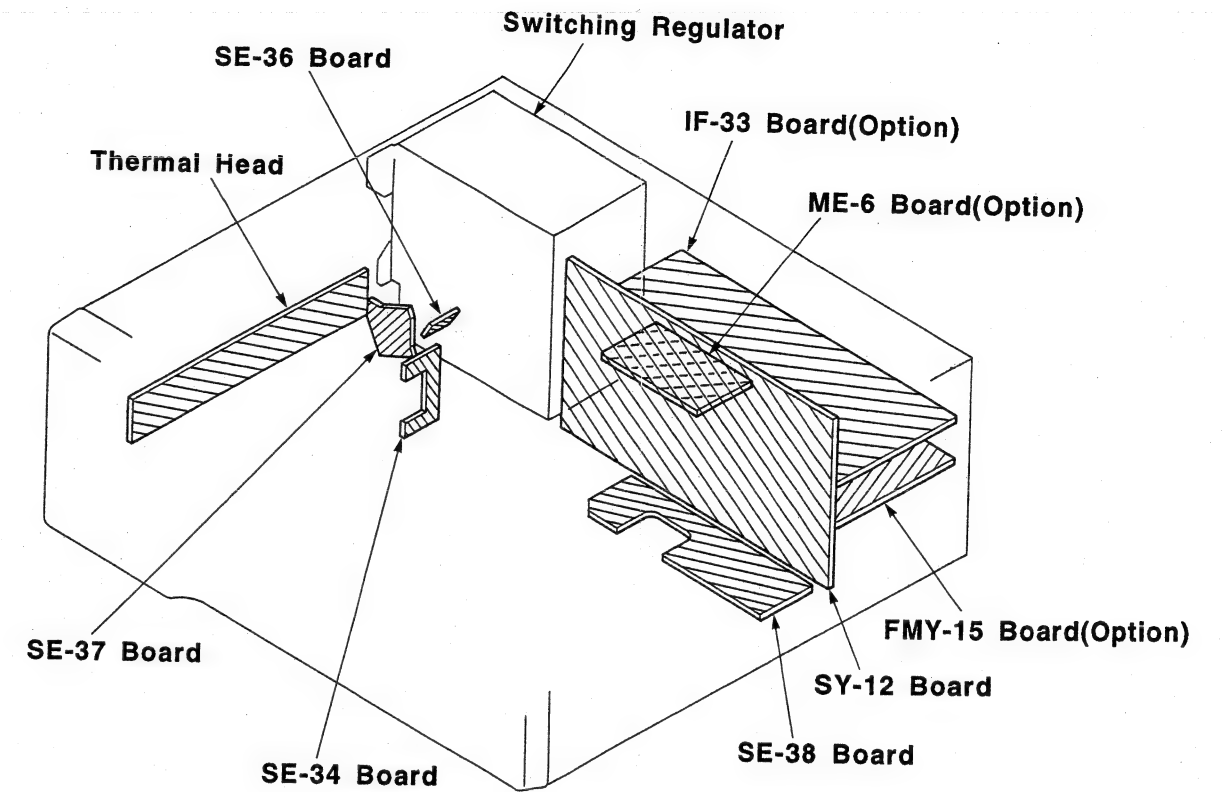


SECTION 3 DIAGRAMS

2-15. REMOVING THE OPTIONAL BOARDS (IF-33 AND FMY-15 BOARDS)

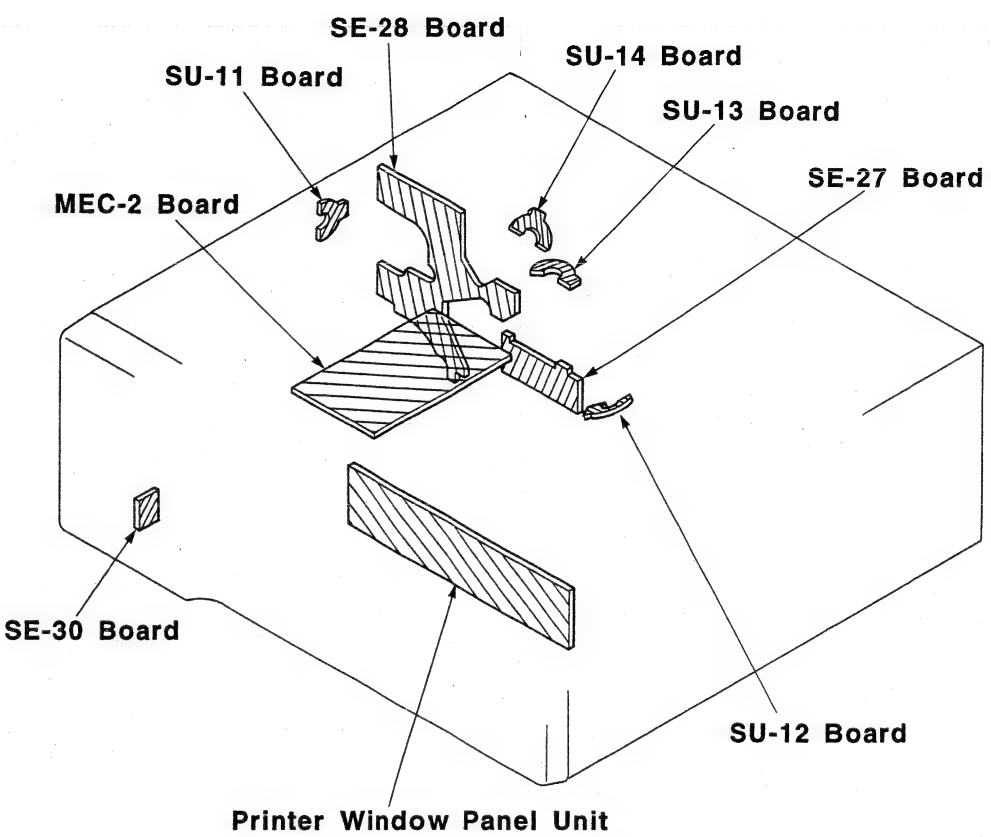
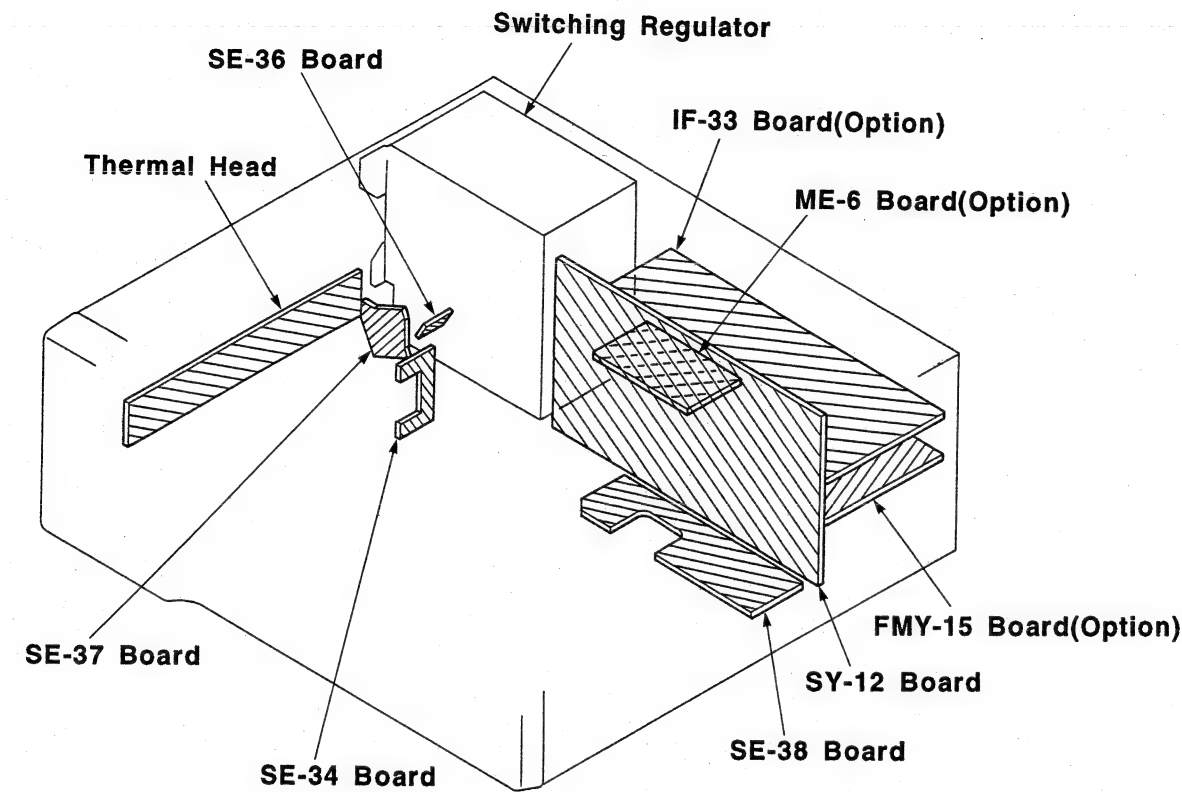


3-1. CIRCUIT BOARDS LOCATION

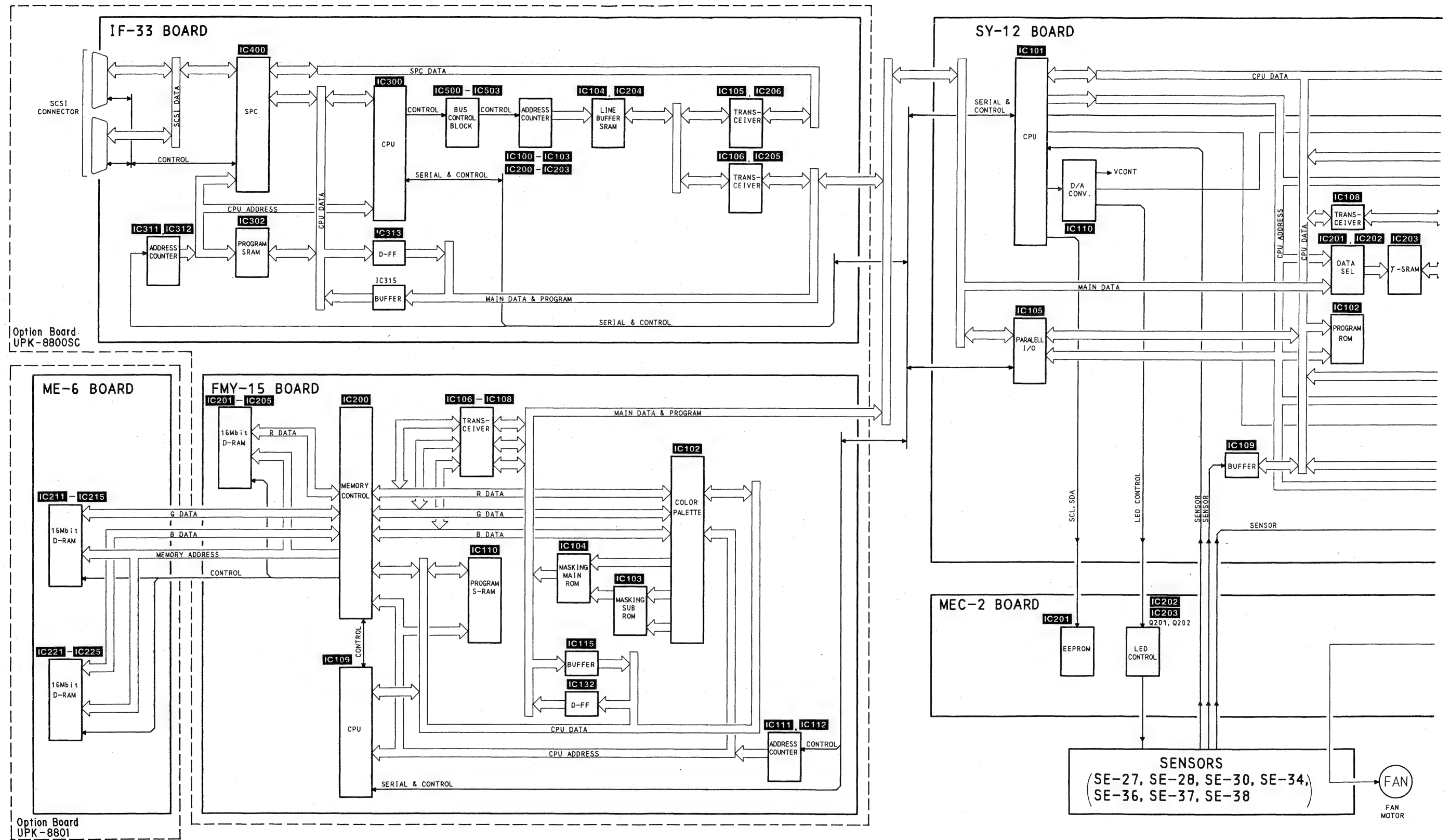


SECTION 3
DIAGRAMS

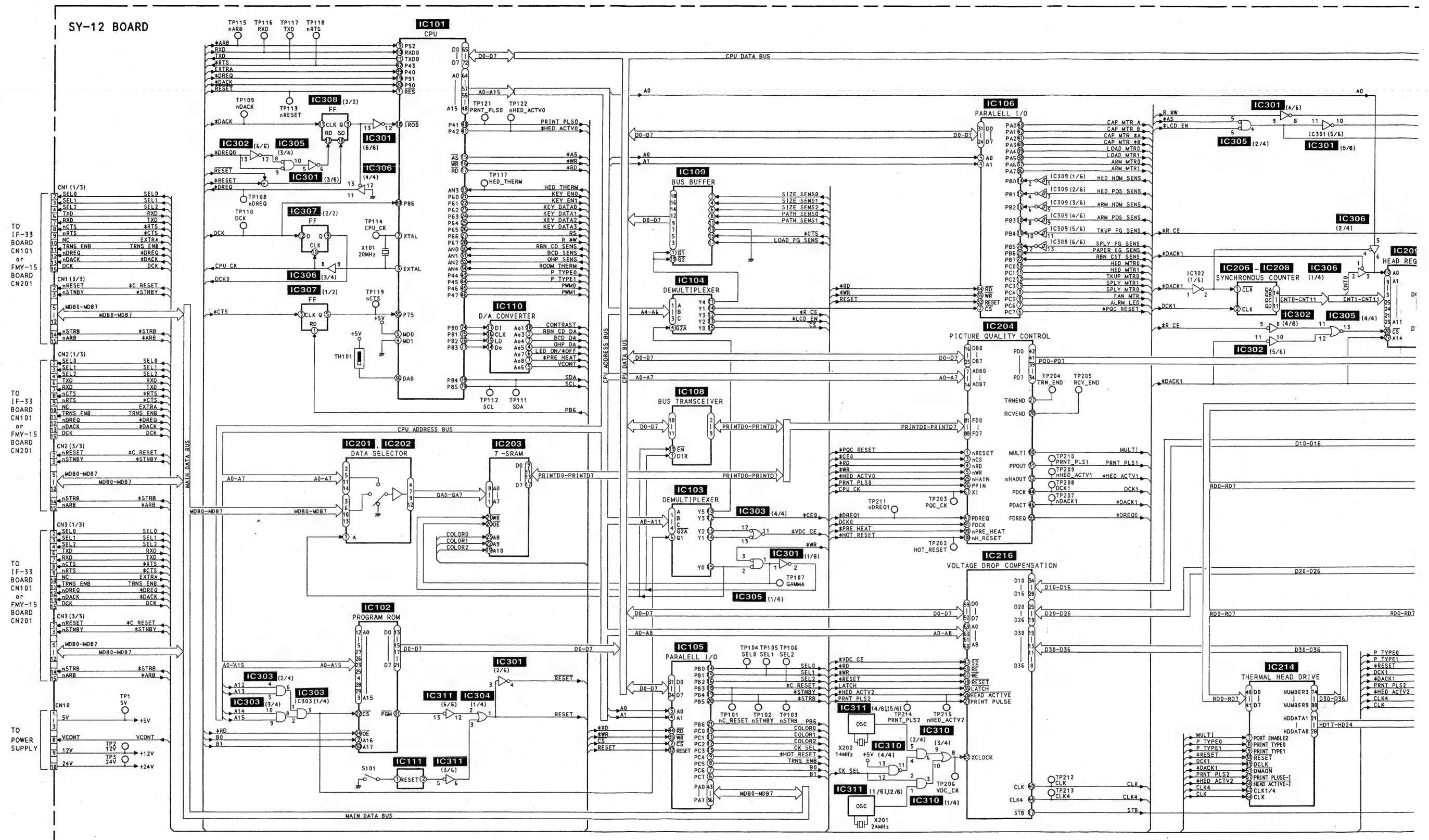
3-1. CIRCUIT BOARDS LOCATION

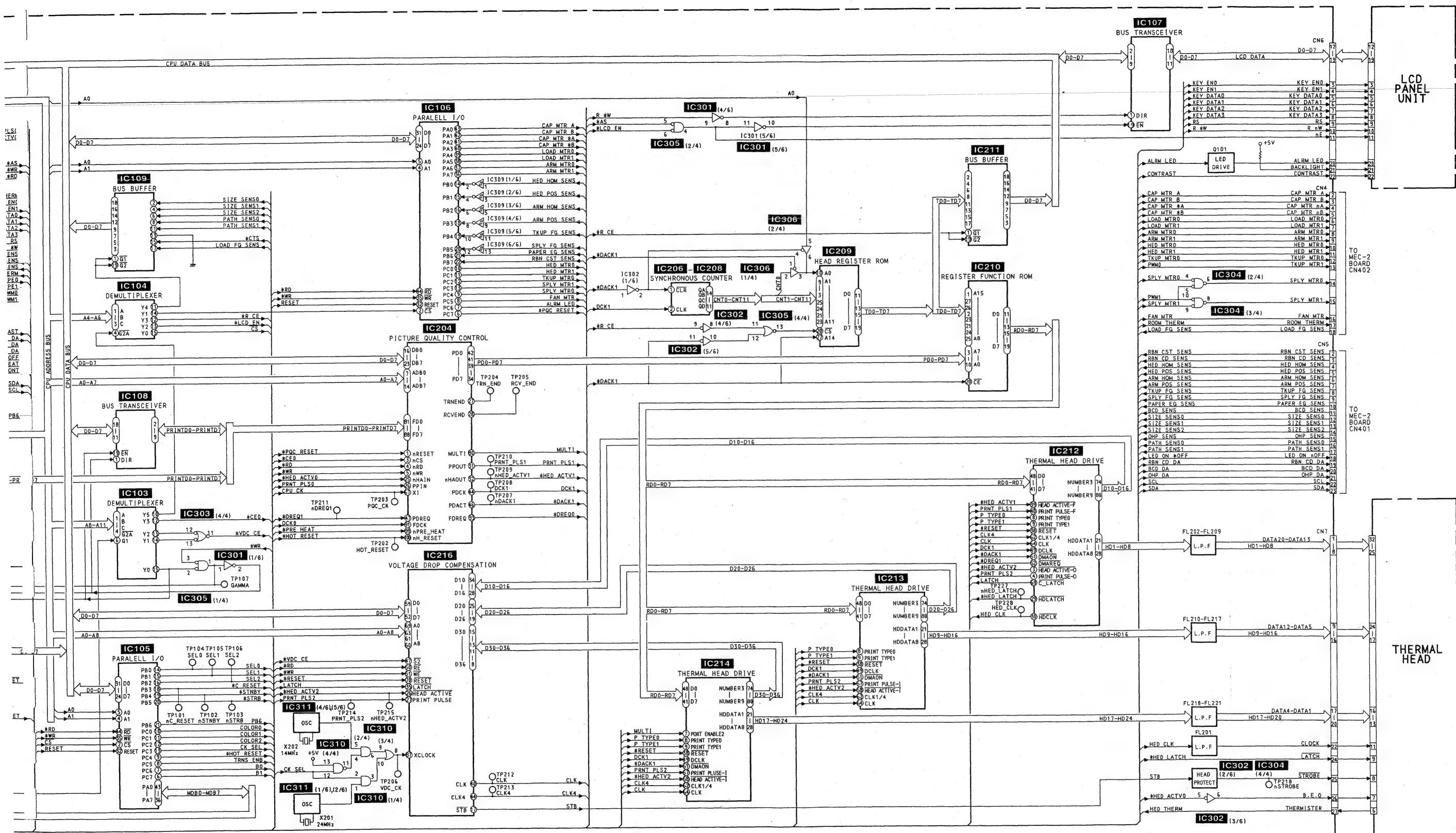


3-2. OVERALL BLOCK DIAGRAM

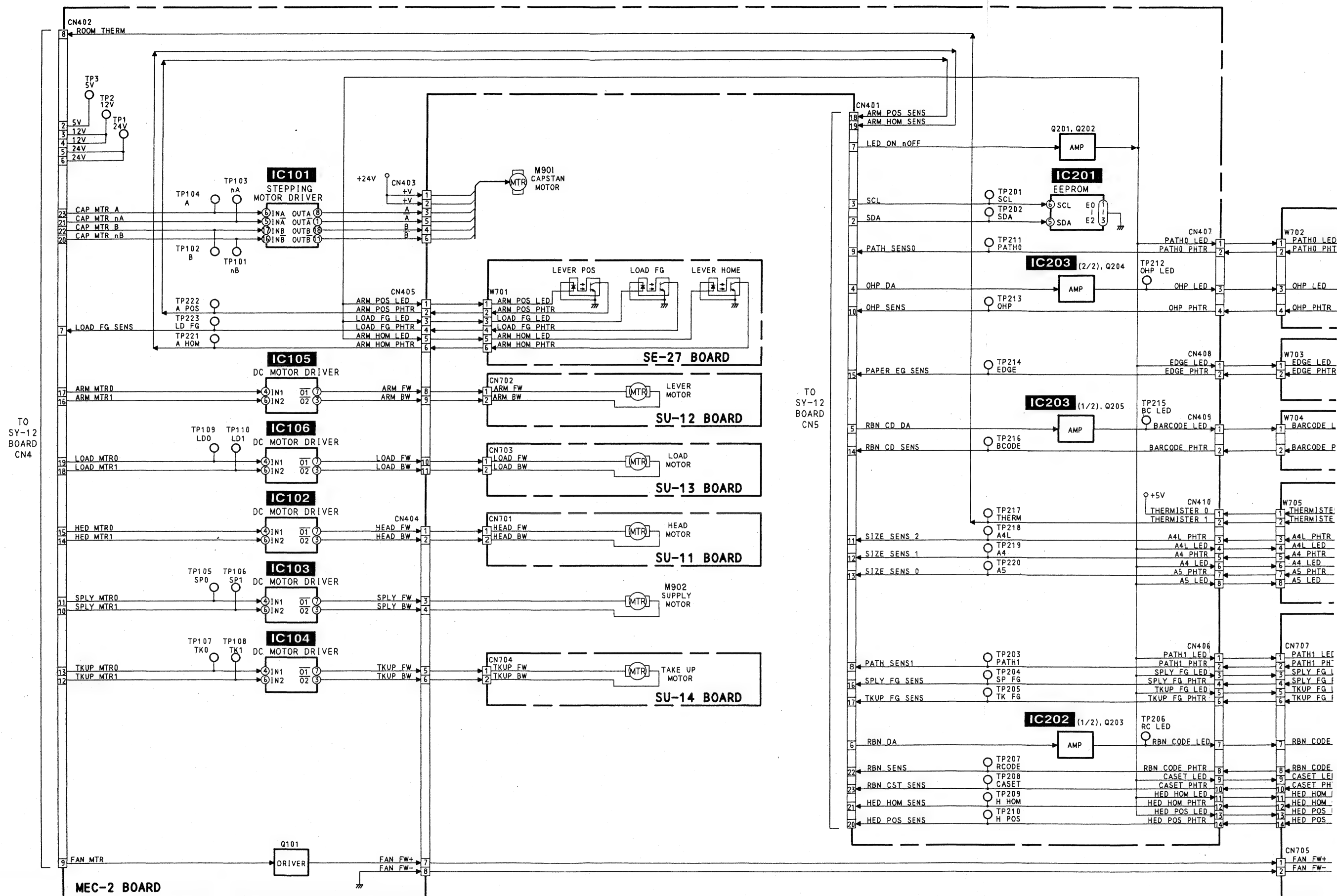


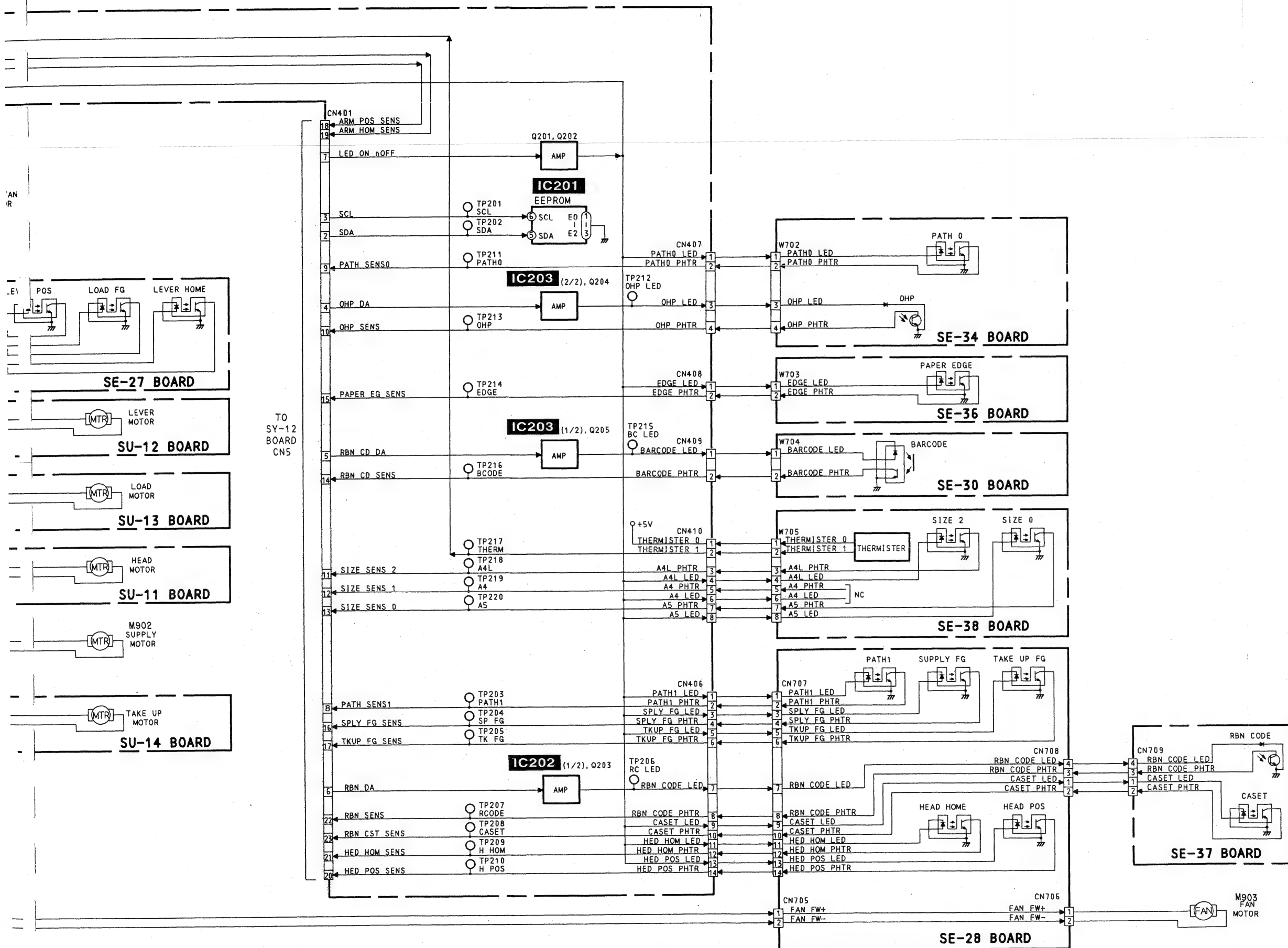
3-3. SYSTEM CONTROL BLOCK DIAGRAM





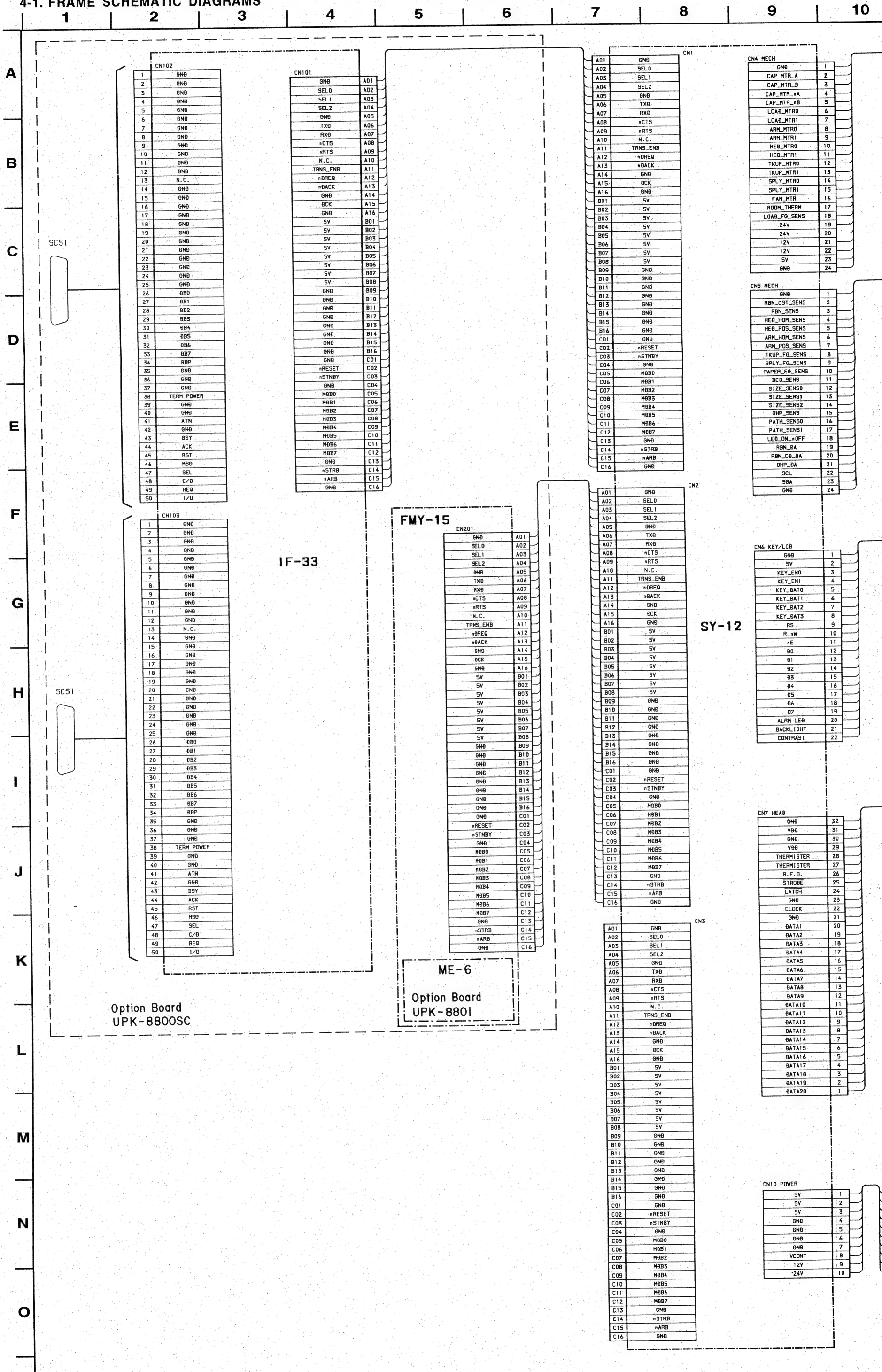
3-4. MECHA CONTROL BLOCK DIAGRAM

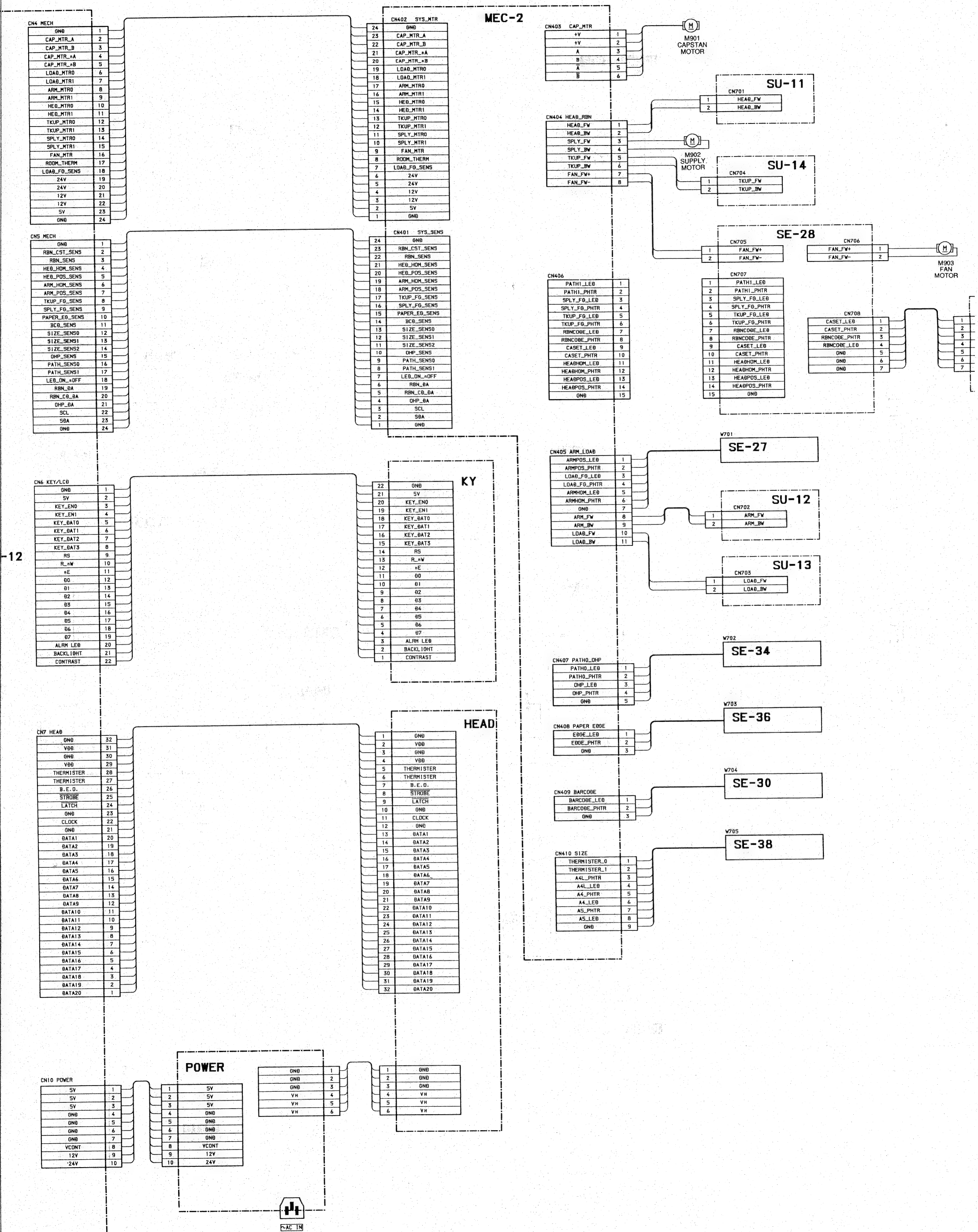


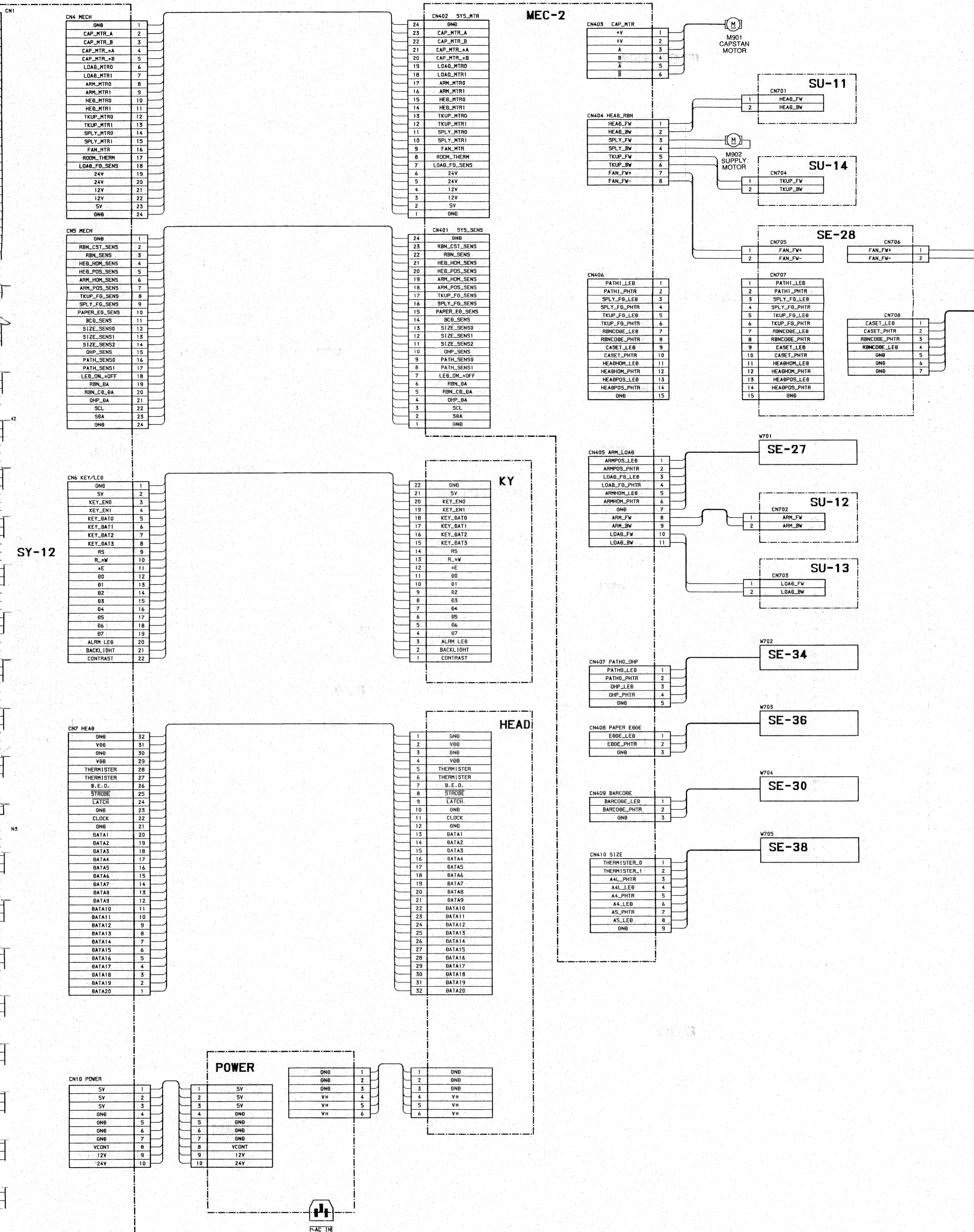


SECTION 4 PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAMS

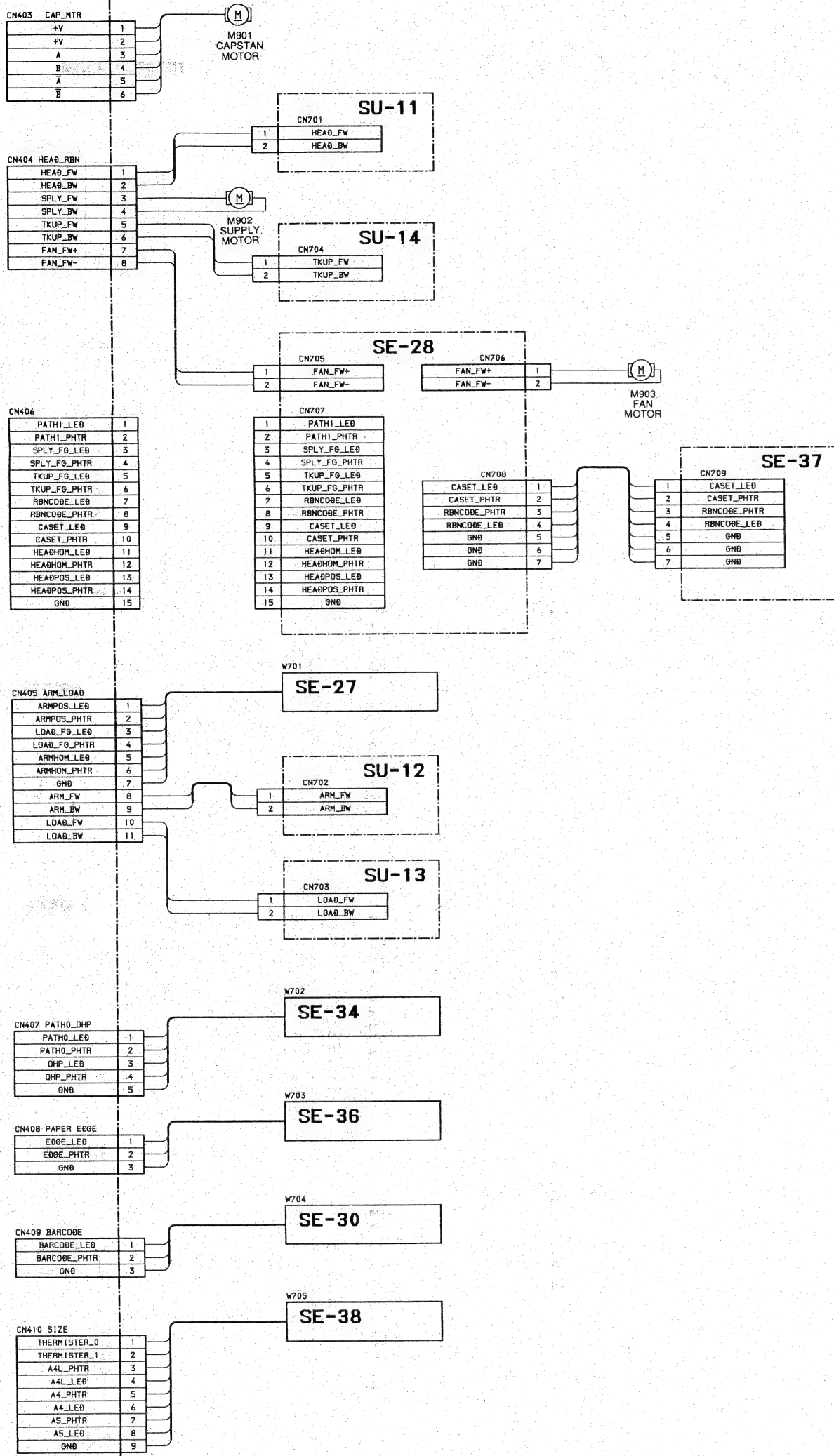






15 16 17 18 19 20 21

MEC-2





SY-12 —1/2— (SYSTEM CONTROL)

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS






THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this, the necessary note is printed in each block.)

• **For Printed Wiring Boards.**

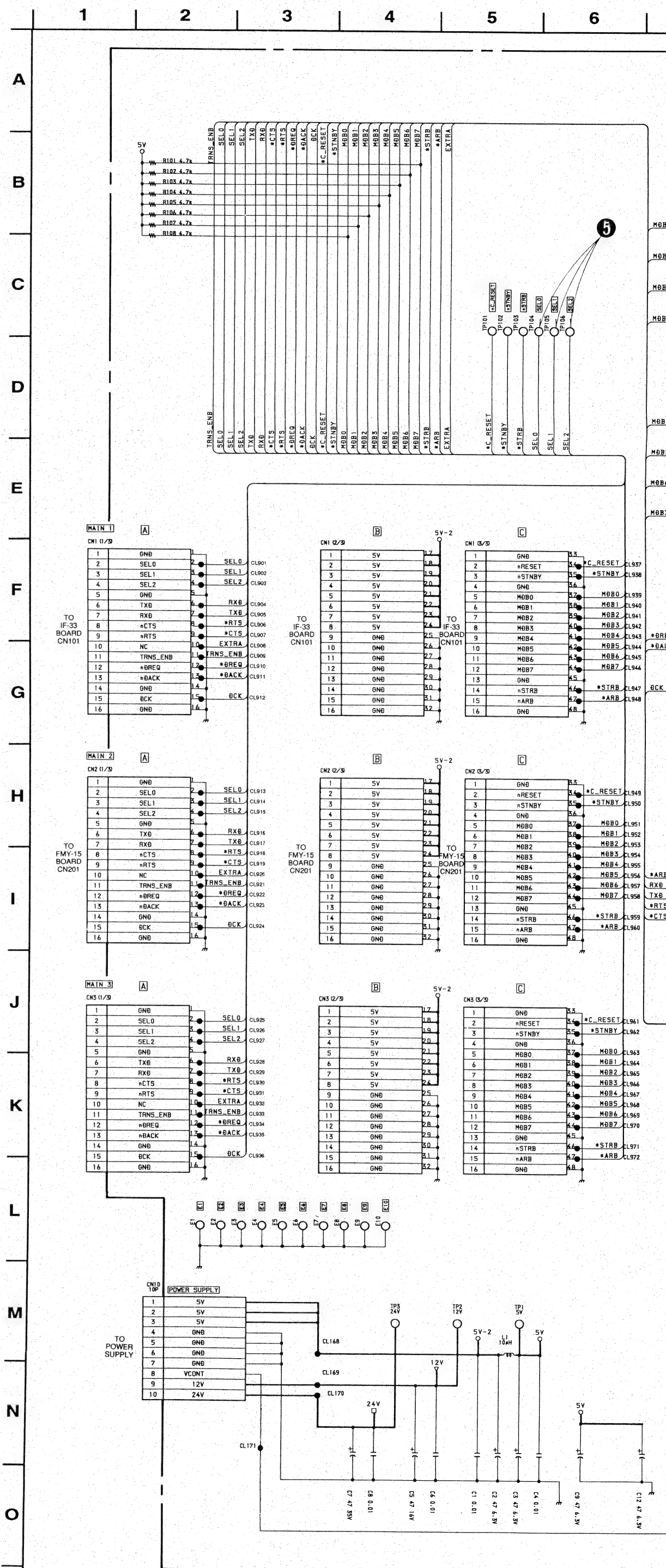
-  : Soldering Side.
-  : Component Side.

• **For Schematic Diagrams.**

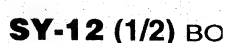
- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
k Ω : 1000 Ω , M Ω : 1000k Ω .
- All capacitors are in μ F unless otherwise noted.
pF: μ μ F.
50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
-  : nonflammable resistor.
-  : fusible resistor.
-  : adjustment for repair.
-  : B+ Line.
-  : B- Line.
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10M Ω).
- Voltage variations may be noted due to normal production tolerances.

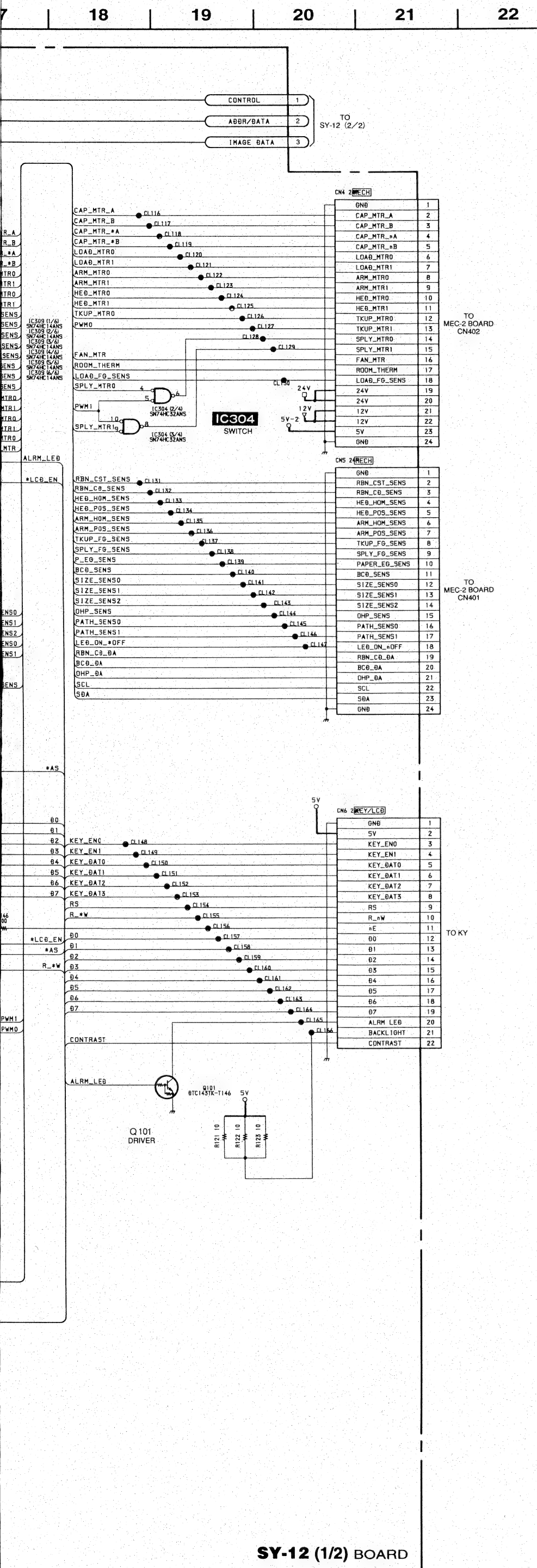
Note: The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et par une marque Δ sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

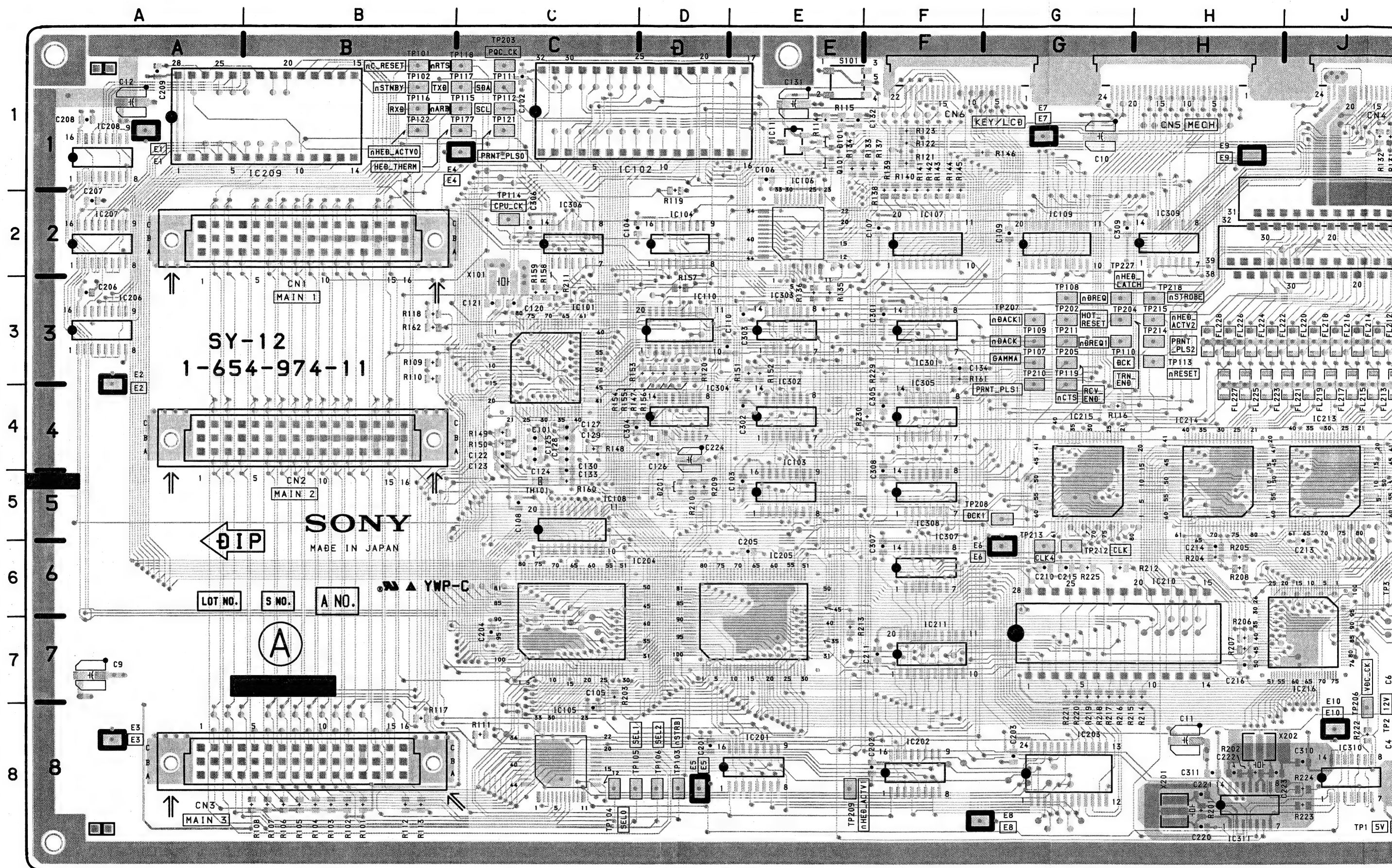


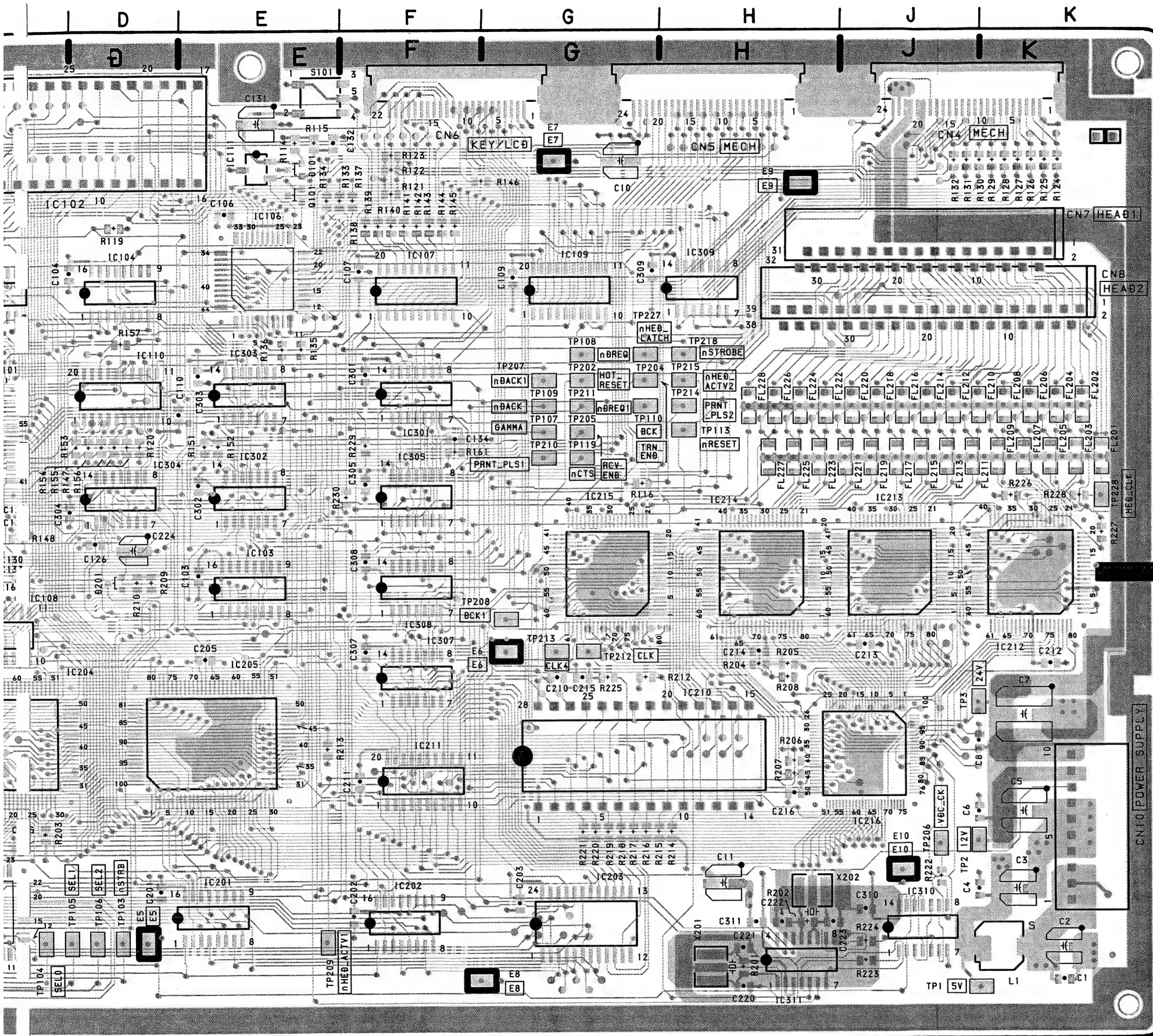






SY-12 (SYSTEM CONTROL)





SY-12 -COMPONENT SIDE-
1-654-978-11

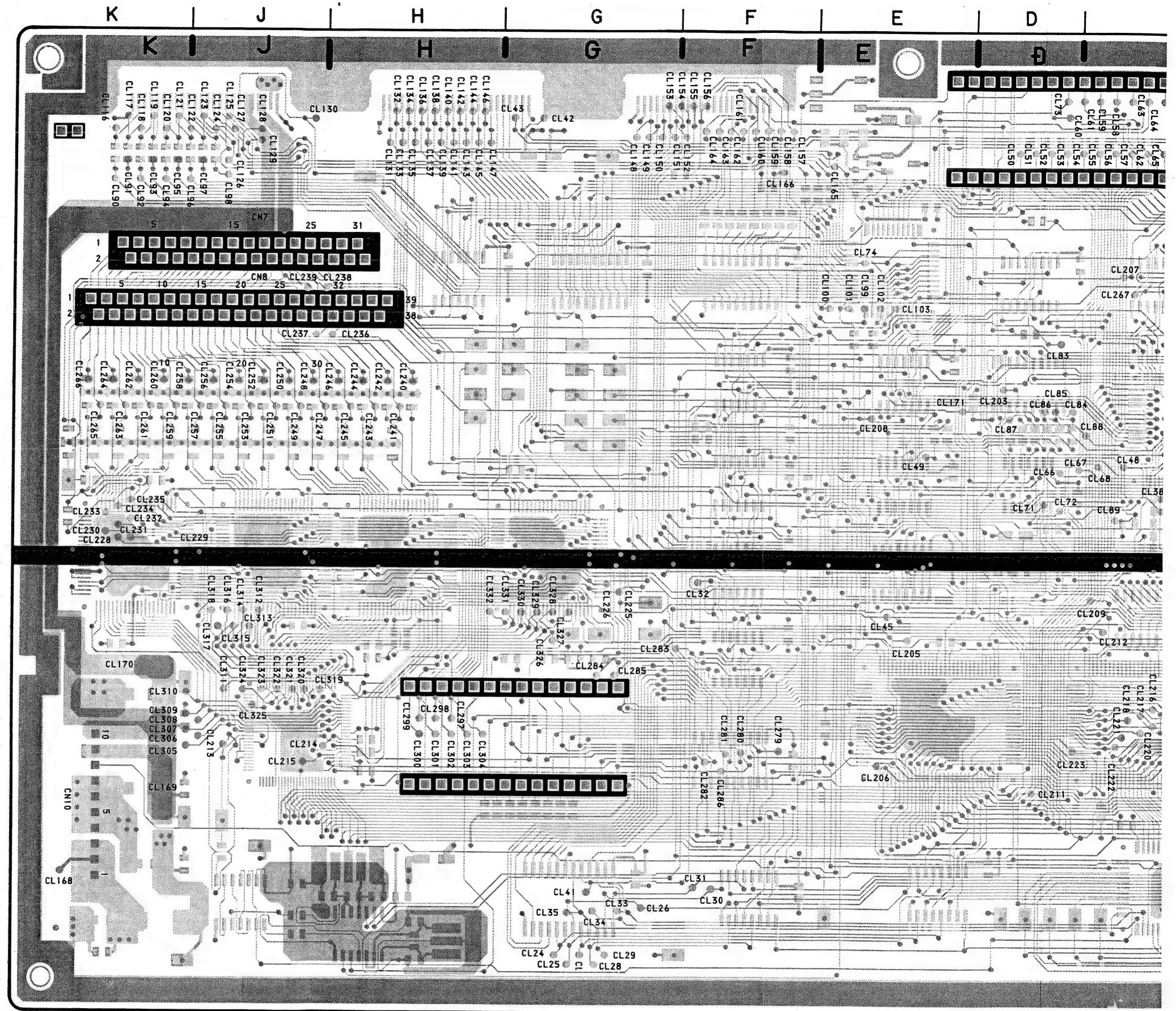
SY-12 BOARD

D101	E-1	IC304	D-4
D201	D-5	IC305	F-4
		IC306	C-2
FL201	K-4	IC307	F-5
FL202	K-3	IC308	F-4
FL203	K-4	IC309	H-2
FL204	K-3	IC310	J-8
FL205	K-4	IC311	H-8
FL206	K-3		
FL207	K-4	L1	K-8
FL208	K-3		
FL209	K-4	Q101	E-2
FL210	K-3		
FL211	J-4		
FL212	J-3		
FL213	J-4		
FL214	J-3		
FL215	J-4		
FL216	J-3		
FL217	J-4		
FL218	J-3		
FL219	J-4		
FL220	J-3		
FL221	J-4		
IC101	C-3		
IC102	C-1		
IC103	E-4		
IC104	D-2		
IC105	C-8		
IC106	E-2		
IC107	F-2		
IC108	C-5		
IC109	G-2		
IC110	D-3		
IC111	E-1		
IC201	E-8		
IC202	F-8		
IC203	G-8		
IC204	C-6		
IC206	A-3		
IC207	A-2		
IC208	A-1		
IC210	J-8		
IC211	F-7		
IC212	K-5		
IC213	J-4		
IC214	H-5		
IC216	J-7		
IC301	F-3		
IC302	E-4		
IC303	E-3		

SY-12 (SYSTEM CONTROL)

SY-12 BOARD

D101	E-1	IC304	D-4
D201	D-5	IC305	F-4
		IC306	C-2
FL201	K-4	IC307	F-5
FL202	K-3	IC308	F-4
FL203	K-4	IC309	H-2
FL204	K-3	IC310	J-8
FL205	K-4	IC311	H-8
FL206	K-3		
FL207	K-4	L1	K-8
FL208	K-3		
FL209	K-4	Q101	E-2
FL210	K-3		
FL211	J-4		
FL212	J-3		
FL213	J-4		
FL214	J-3		
FL215	J-4		
FL216	J-3		
FL217	J-4		
FL218	J-3		
FL219	J-4		
FL220	J-3		
FL221	J-4		
IC101	C-3		
IC102	C-1		
IC103	E-4		
IC104	D-2		
IC105	C-8		
IC106	E-2		
IC107	F-2		
IC108	C-5		
IC109	G-2		
IC110	D-3		
IC111	E-1		
IC201	E-8		
IC202	F-8		
IC203	G-8		
IC204	C-6		
IC206	A-3		
IC207	A-2		
IC208	A-1		
IC210	J-8		
IC211	F-7		
IC212	K-5		
IC213	J-4		
IC214	H-5		
IC216	J-7		
IC301	F-3		
IC302	E-4		
IC303	E-3		



SYSTEM CONT.

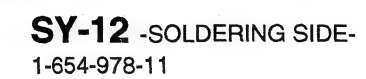
SY-12

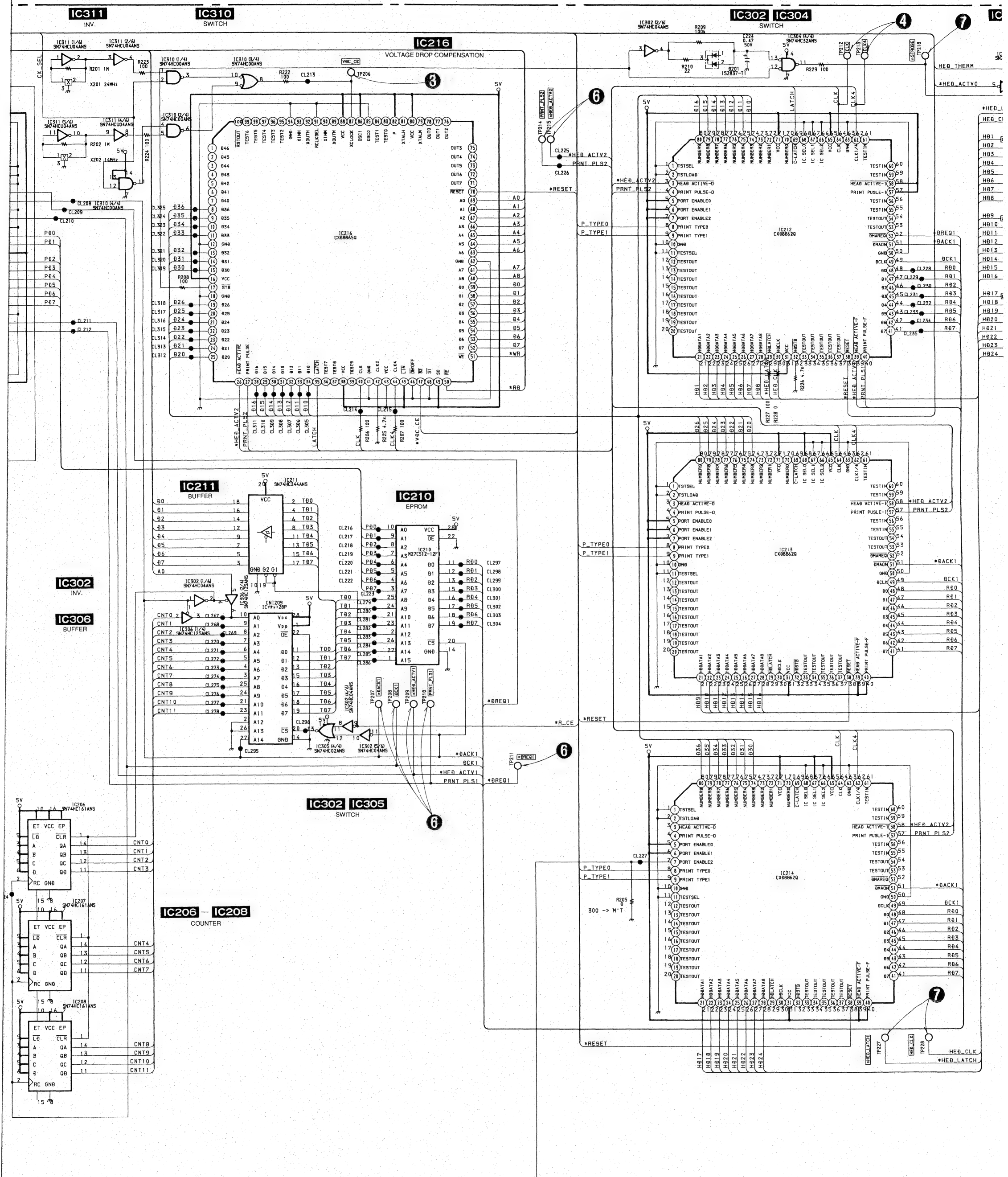
SYSTEM CONT.

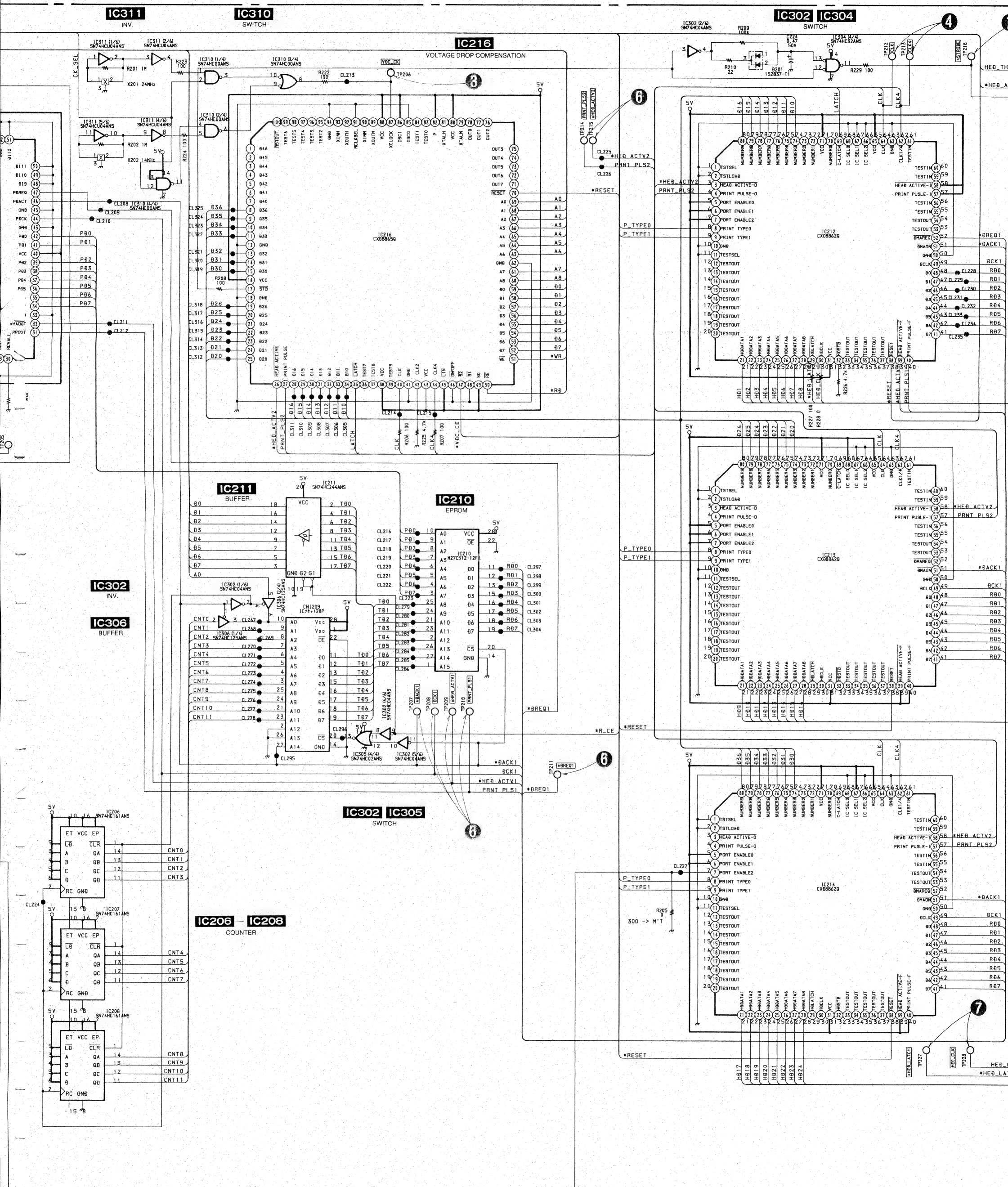
SY-12

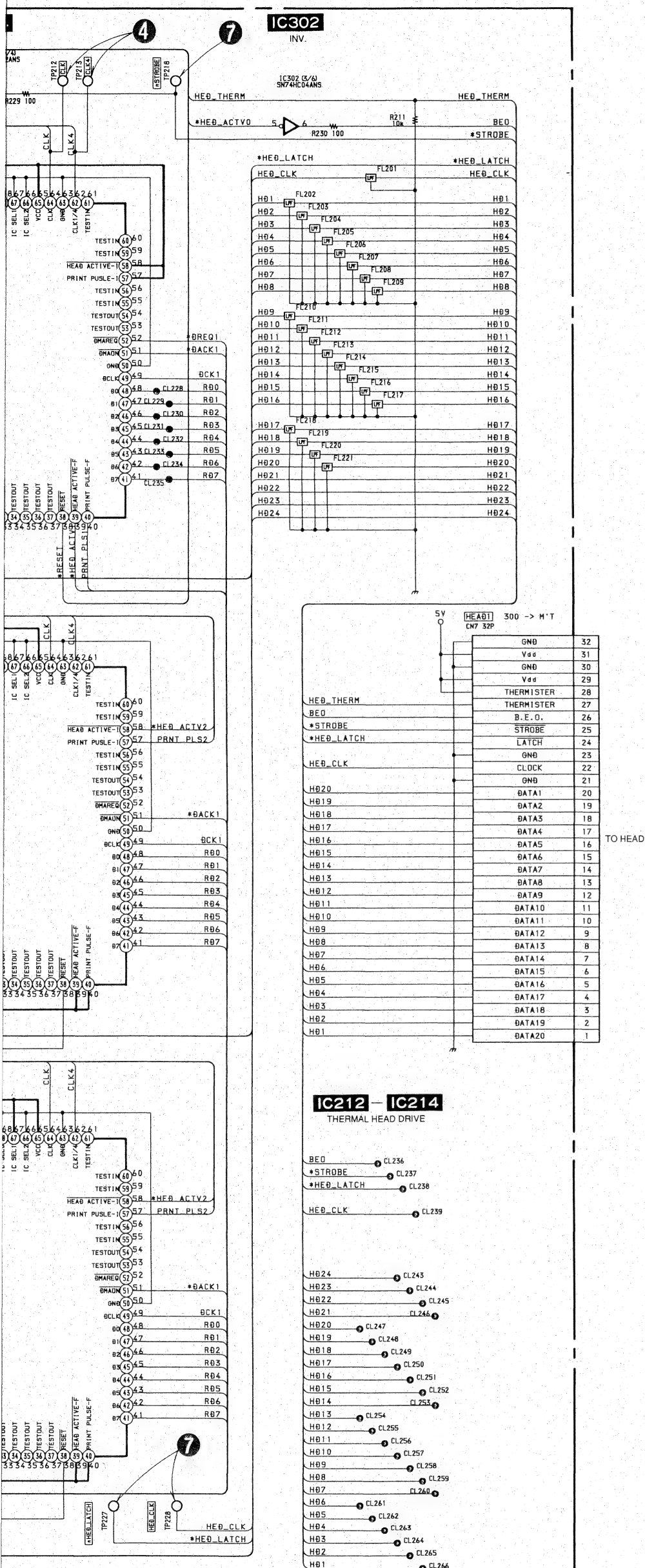
SYSTEM CONT.

SY-12

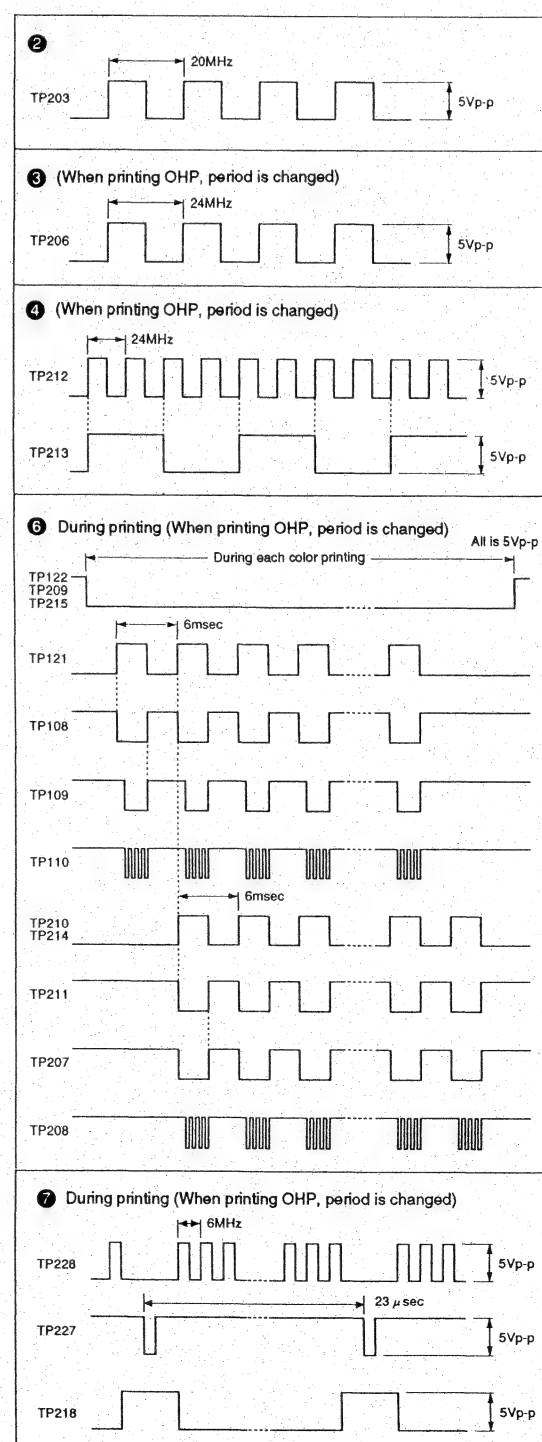




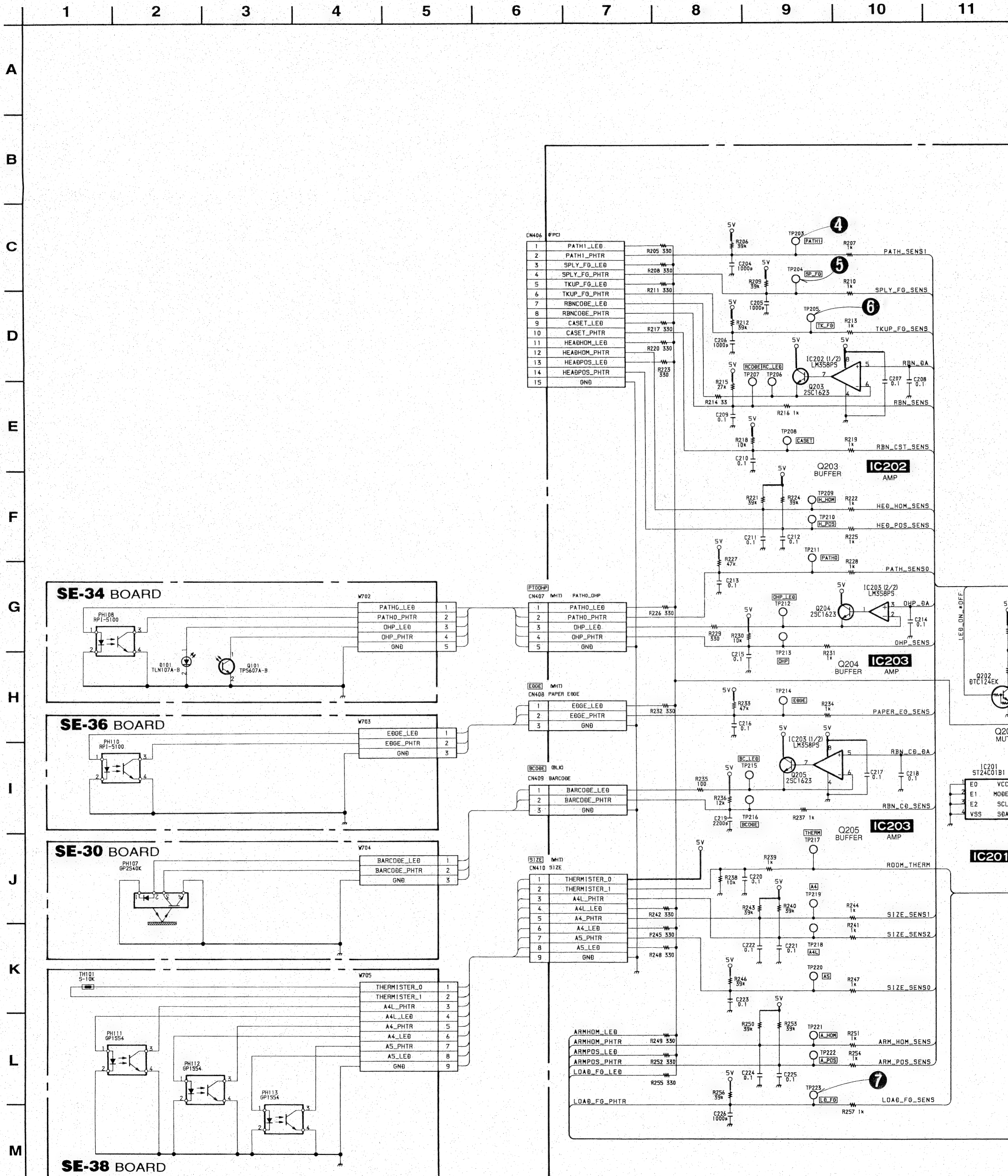




SY-12 (2/2) BOARD



MEC-2 (MECHA INTERFACE) SE-27 (ARM POSITION SENSOR, LOAD SENSOR) SE-28 (HEAD POSITION SENSOR, TAKE-UP SENSOR, SUPPLY
SE-37 (RIBBON CODE SENSOR, CASSETTE SENSOR) SE-38 (PAPER SIZE SENSOR) SU-11 (HEAD MOTOR) SU-12 (LEVER MOTOR) SU-13



MECHA I/F

MEC-2

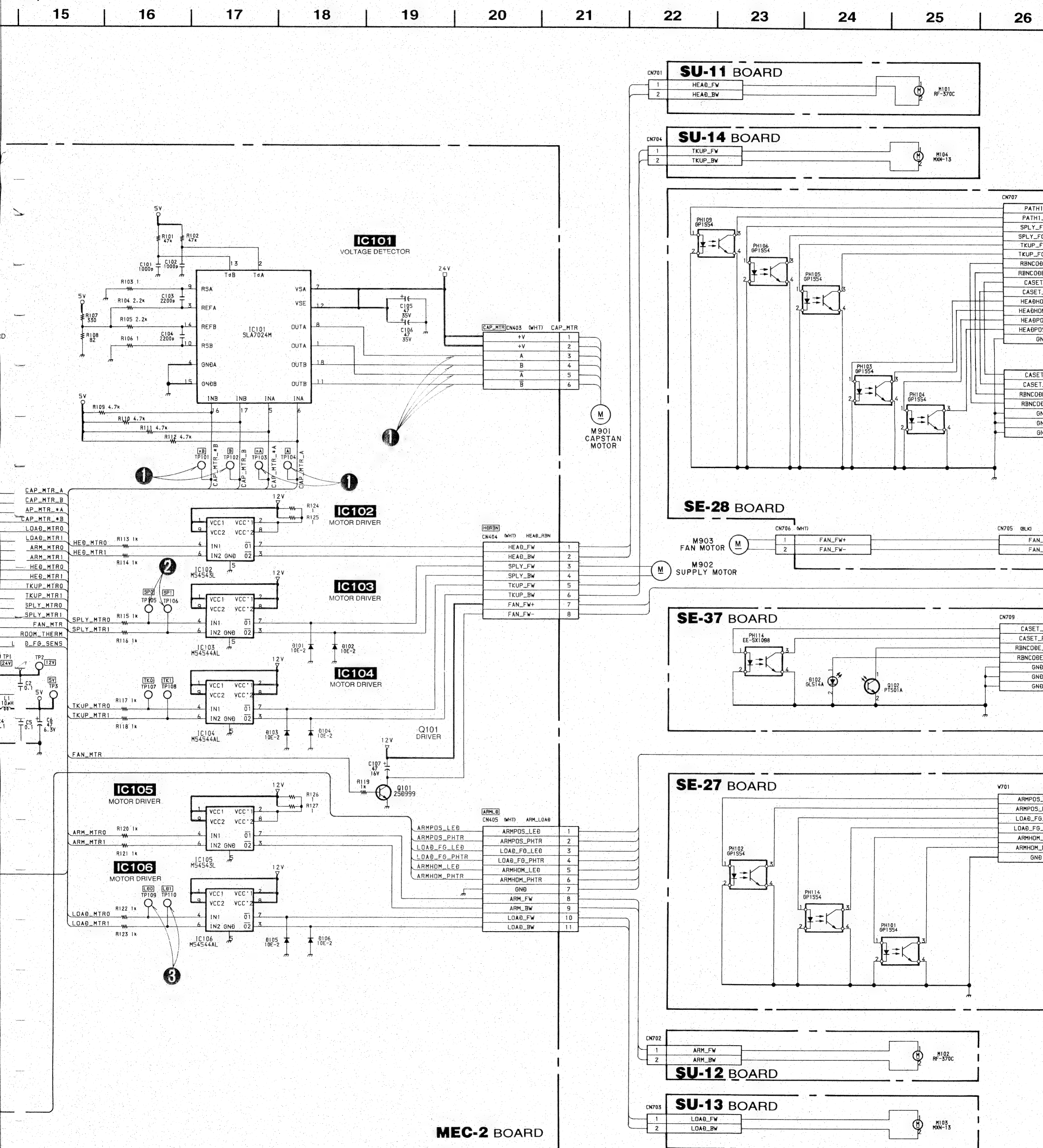
MECHA I/F

MEC-2

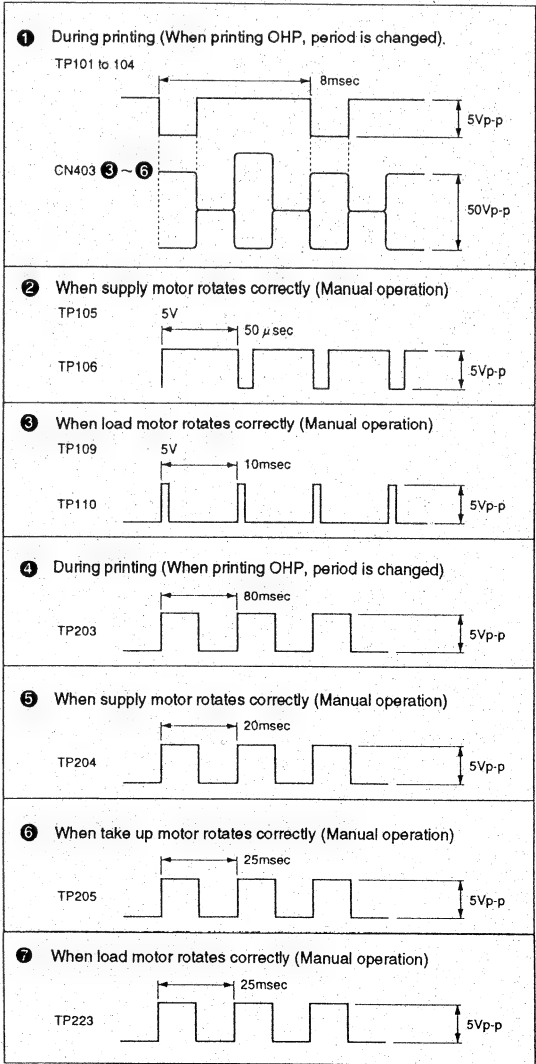
	11	12	13	14	15	16	17	18	19	20	21	22
--	----	----	----	----	----	----	----	----	----	----	----	----



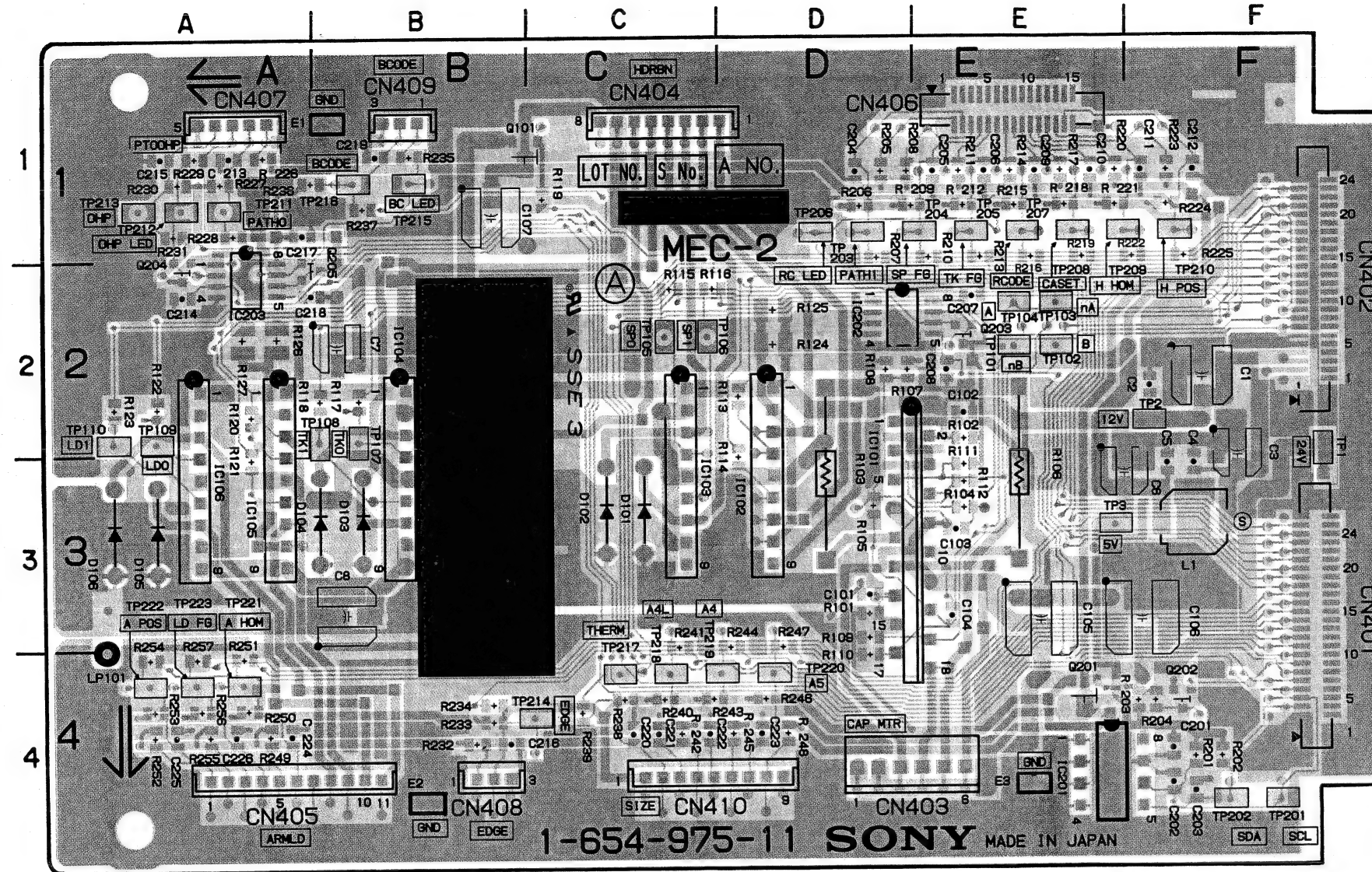
(BAR CODE SENSOR) SE-34 (PATH 0 SENSOR, OHP SENSOR) SE-36 (PAPER EDGE SENSOR)
OTOR)



19	20	21	22	23	24	25	26	27
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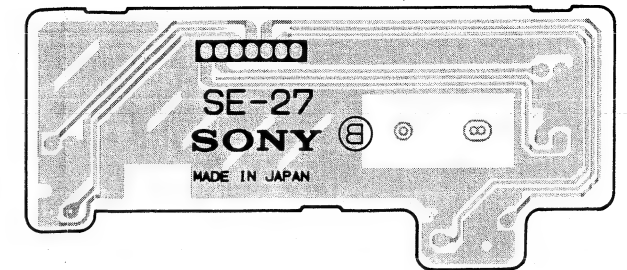


MEC-2 (MECHA INTERFACE) SE-27 (ARM POSITION SENSOR, LOAD SENSOR) SE-28 (HEAD POSITION SENSOR, TAKE-UP SENSOR, SUPPLY SENSOR, PATH 1 SENSOR) SE-30 (BAR CODE SENSOR SE-37 (RIBBON CODE SENSOR, CASSETTE SENSOR) SE-38 (PAPER SIZE SENSOR) SU-11 (HEAD MOTOR) SU-12 (LEVER MOTOR) SU-13 (LOAD MOTOR) SU-14 (TAKE-UP MOTOR)

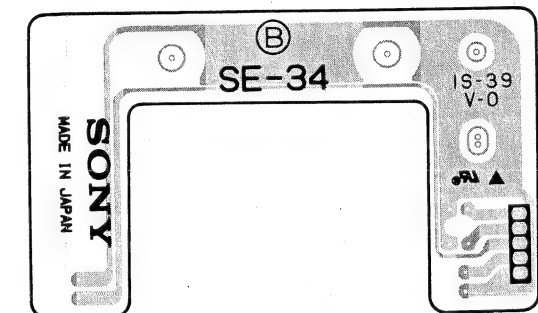


MEC-2 BOARD

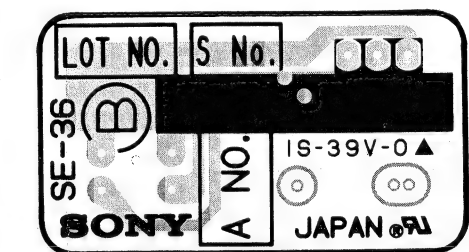
D101	C-3
D102	C-3
D103	B-3
D104	A-3
D105	A-3
D106	A-3
IC101	D-2
IC102	D-3
IC103	C-3
IC104	B-2
IC105	A-3
IC106	A-3
IC201	E-4
IC202	D-2
IC203	A-2
LP101	A-4
L1	F-3
Q101	B-1
Q201	E-4
Q202	F-4
Q203	E-2
Q204	A-1
Q205	B-1



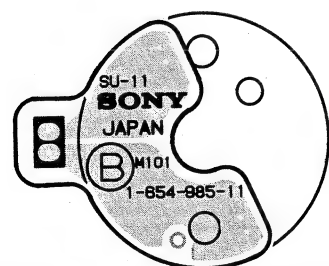
SE-27 -SOLDERING SIDE-
1-654-976-11



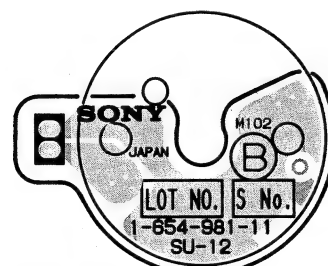
SE-34 -SOLDERING SIDE-
1-654-978-11



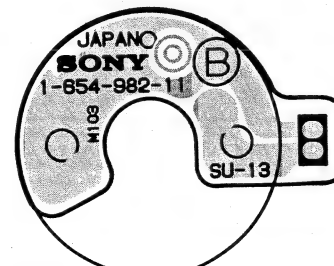
SE-36 -SOLDERING SIDE-
1-654-979-11



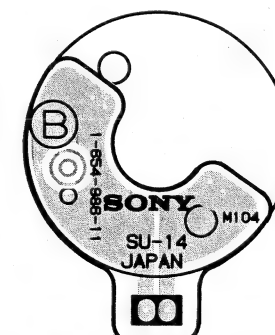
SU-11 -SOLDERING SIDE-
1-654-985-11



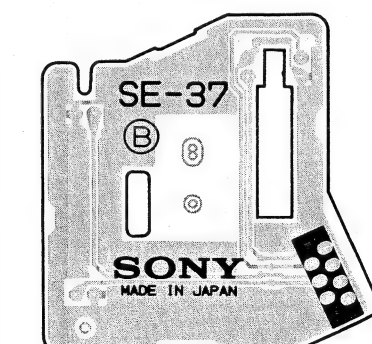
SU-12 -SOLDERING SIDE-
1-654-981-11



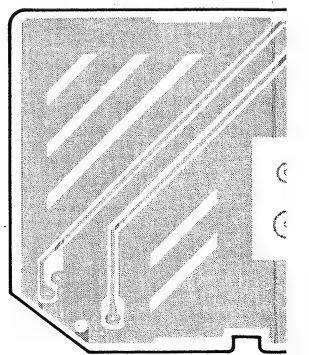
SU-13 -SOLDERING SIDE-
1-654-982-11



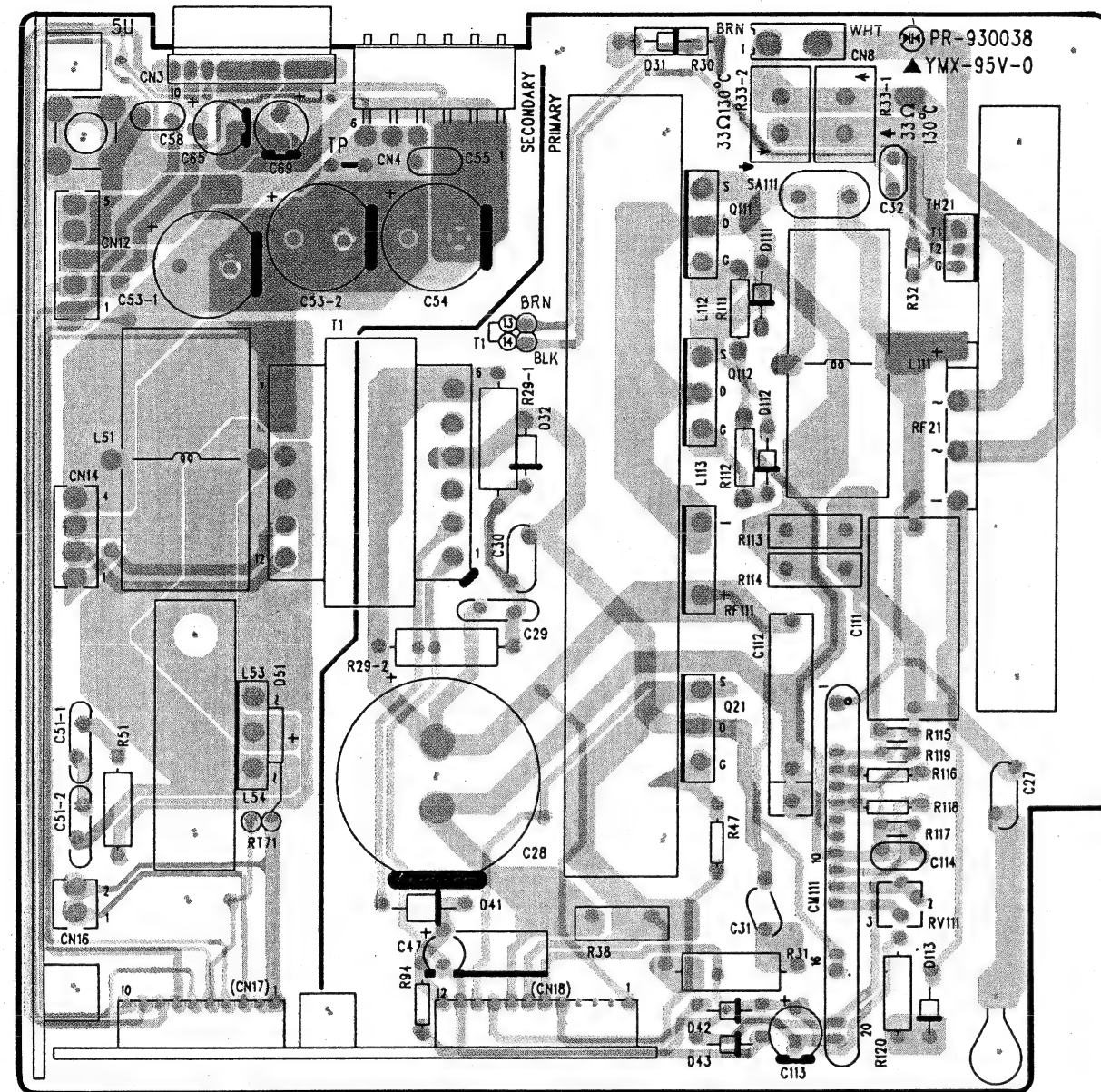
SU-14 -SOLDERING SIDE-
1-654-986-11



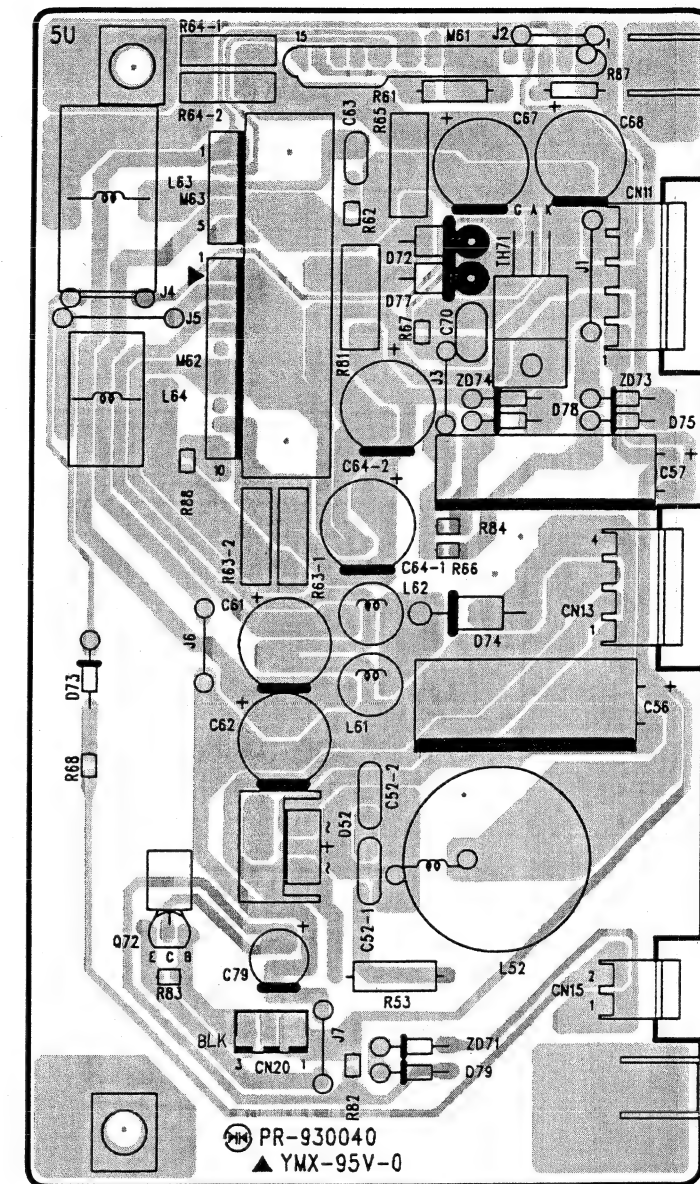
SE-37 -SOLDERING SIDE-
1-654-984-11



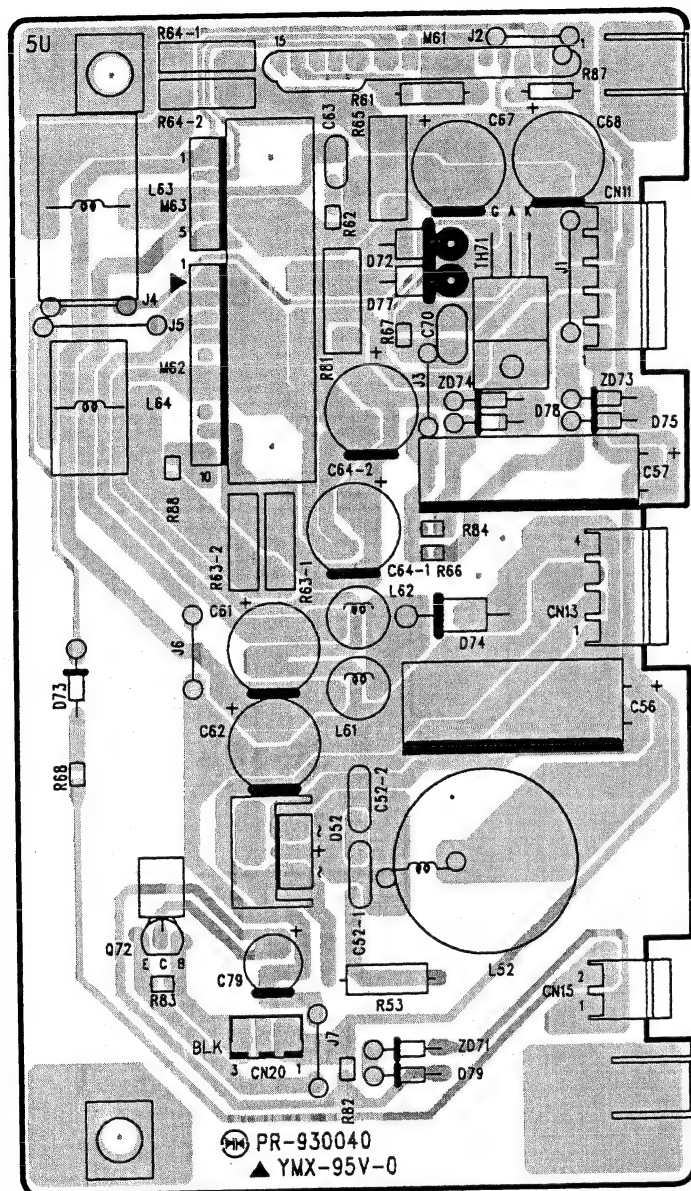
SWITCHING REGULATOR



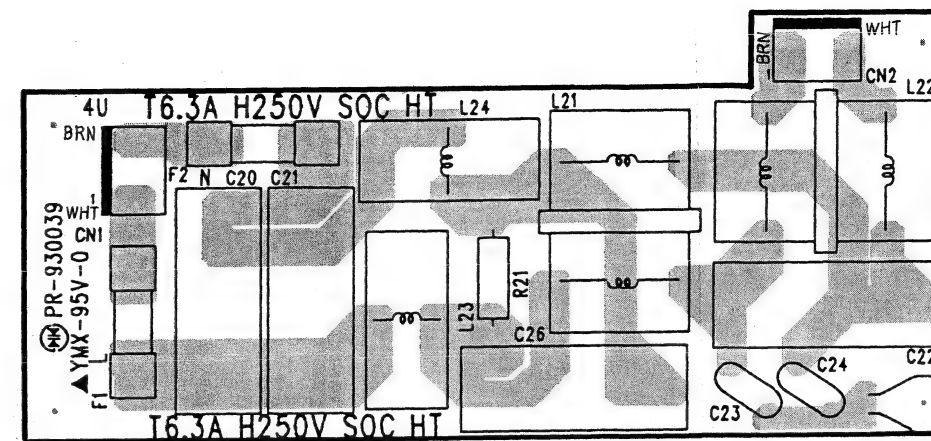
PR-930038 -SOLDERING SIDE-
9-909-749-01



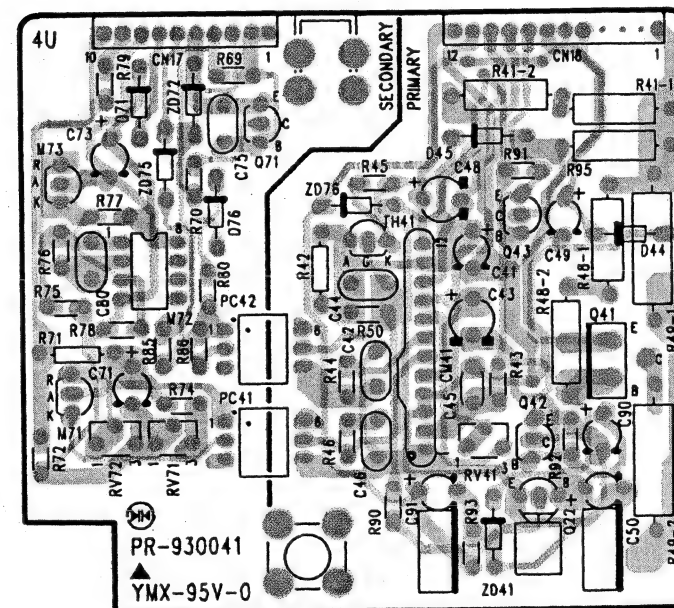
PR-930040 -SOLDERING SIDE-
9-909-783-01



PR-930040 -SOLDERING SIDE-
9-909-783-01

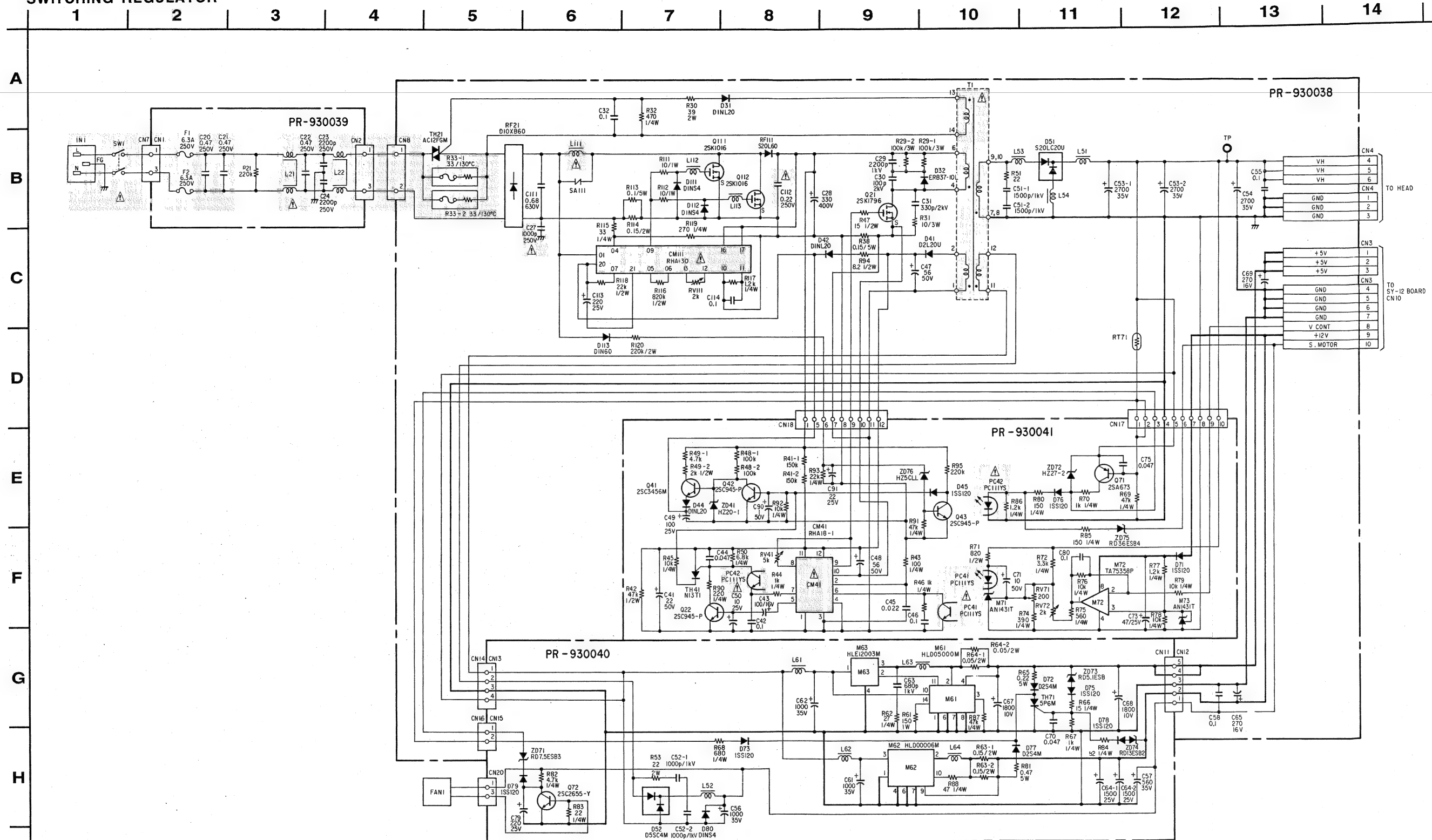


PR-930039 -SOLDERING SIDE-
9-909-752-01



PR-930041 -SOLDERING SIDE-
9-909-807-01

SWITCHING REGULATOR

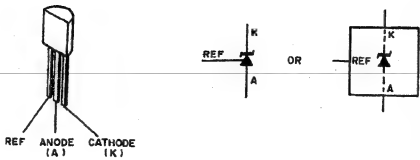


4-3. SEMICONDUCTORS

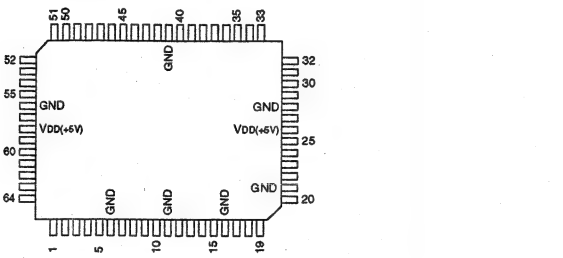
The chart in this section may sometimes show diodes, transistors, and ICs that are not interchangeable. When replacing a component, be sure to refer to the parts list. The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

TYPE	PAGE	TYPE	PAGE	TYPE	PAGE
10E-2	78	DTC143TK	78	RD5.1ES-B2	78
1S2075K	78	ERB37-10	78	RD7.5ES-B3	78
1S2837	78	GL514A	78	S20L60	78
1SS120	78	GP1S54	78	S20LC20U	78
1SS184	78	GP2S40K	78	SLA7024M	73
2SA673	78	HD6413378F10	69	SN74HC00ANS	73
2SB798-DL	78	HD6433228A69F	68	SN74HC02ANS	73
2SC1623-LG	78	HLD00006M	70	SN74HC04ANS	73
2SC2655	78	HLD05000M	70	SN74HC08ANS	74
2SC3456M	78	HLE12003M	70	SN74HC14ANS	74
2SC945	78	HM5116400AS7GS	70	SN74HC32ANS	74
2SD999-CLCK	78	HMT2256ALF	71	SN74HC74ANS	74
2SK1016	78	HZ20-1	78	SN74HC86ANS	74
2SK1796	78	HZ27-2	78	SN74HC125ANS	74
5P6M	78	HZ5CLL	78	SN74HC138ANS	74
AN1431T	66	IDT6116SA25S0	71	SN74HC157ANS	74
CXD1185CQ	66	LM358PS	71	SN74HC161ANS	75
CXD8862Q	66	M27C1001-12F1	72	SN74HC244ANS	75
CXD8865R	66	M27C1001-15F1	72	SN74HC245ANS	75
CXD8869Q	67	M54543L	72	SN74HC374ANS	75
CXD8909Q	67	M54544AL	72	SN74HC4040ANS	75
CXD8911Q	68	M62352FP	73	SN74HCU04ANS	76
D10XB60	78	M62352P	73	ST24C01CB1	76
D1LN20	78	PC111YS	78	TA75358P	76
D1N60	78	PRI-5100	78	TLN107A	78
D1NS4	78	PST572CMT	73	TPS607A	78
D2S4M	78	PT501A	78	UPD27C2001GW	76
D5SC4M	78	RB110C	78	UPD27C8001GW	77
DS21S07AE	69	RD13ES-B2	78	UPD71055GB-3B4	77
DTC124EK	78	RD36ES-B4	78		

AN1431T (MATSUSHITA)
ADJUSTABLE PRECISION SHUNT REGULATOR



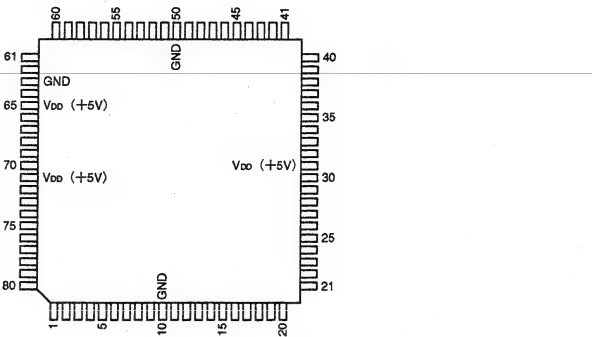
CXD1185CQ (SONY)
SCSI 1 PROTOCOL CONTROLLER
—TOP VIEW—



PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	A3	14	I/O	DB7	27	—	GND	40	I/O	Co
2	I	A2	15	I/O	DBP	28	I/O	I/O	41	—	GND
3	I	A1	16	—	GND	29	I	RES	42	O	IRQ
4	I	A0	17	I/O	ATN	30	I	CS	43	O	DRQ
5	I/O	DB0	18	I/O	BSY	31	I	RE	44	I	DACK
6	—	GND	19	I/O	ACK	32	I	WE	45	I	WED
7	I/O	DB1	20	I/O	RST	33	I/O	C7	46	I	RED
8	I/O	DB2	21	—	GND	34	I/O	C6	47	I/O	D0
9	I/O	DB3	22	I/O	MSG	35	I/O	C5	48	I/O	D1
10	I/O	DB4	23	I/O	SEL	36	I/O	C4	49	I/O	D2
11	—	GND	24	I/O	C/D	37	I/O	C3	50	I/O	D3
12	I/O	DB5	25	I/O	REQ	38	I/O	C2	51	I/O	D4
13	I/O	DB6	26	—	VDD	39	I/O	C1	52	I/O	D5

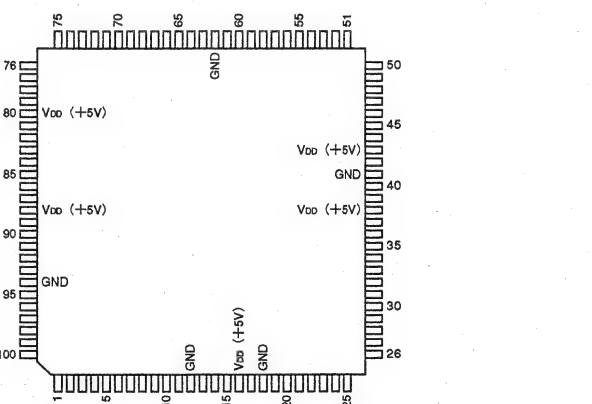
INPUT	INPUT/OUTPUT
A0 - A3 : ADDRESS	ACK : ACKNOWLEDGE
CLK : CLOCK (5 - 16MHz)	ATN : ATTENTION
CS : CHIP SELECT	BSY : BUSY
DACK : DMA REQUEST ACKNOWLEDGE	C0 - C7 : CPU BUS
RE : READ	C/D : CONTROL / DATA
RED : DATA BUS READ	D0 - D7 : DATA BUS
RES : RESET	DB0 - DB7 : DATA BUS
WE : WRITE	DBP : ODD PARITY BIT
WED : DATA BUS WRITE	DP : DATA BUS PARITY
	I/O : INPUT / OUTPUT
	MSG : MESSAGE
	P0 - P3 : I/O PORT
	REQ : BUS REQUEST
	RST : BUS RESET
	SEL : BUS SELECT
OUTPUT	
DRQ : DMA REQUEST	
INIT : INITIATOR SELECT	
IRQ : INTERRUPT REQUEST	
TARG : TARGET SELECT	

CXD8862Q (HITACHI)
C-MOS GATE ARRAY
—TOP VIEW—



PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL
1	I	TSTSEL	17	O	TSTCOMPAS	33	O	TDATA9	49	I	DCLK
2	I	TSTLOAD	18	O	TSTCOMPAS	34	O	TDATA10	50	—	GND
3	O	NHEADACTIV	19	O	TSTCOMPAT	35	O	TDATA11	51	I	NDMAON
4	O	PRINTPULSE	20	O	TDATA8	36	O	TDATA12	52	O	NDMAREQ
5	I	PORTENABLE0	21	O	HDDATA1	37	O	TDATA13	53	O	TDATA14
6	I	PORTENABLE1	22	O	HDDATA2	38	I	NRESET	54	O	TDATA15
7	I	PORTENABLE2	23	O	HDDATA3	39	I	NHEADACTIV	55	I	TADD2
8	I	PRINTTYPEA	24	O	HDDATA4	40	I	PRINTPULSE	56	I	TADD3
9	I	PRINTTYPEB	25	O	HDDATA5	41	I	DATA7	57	I	PRINTPULSE
10	—	GND	26	O	HDDATA6	42	I	DATA6	58	I	NHEADACTIV
11	I	TESTSEL	27	O	HDDATA7	43	I	DATA5	59	I	TADD4
12	O	TSTCOMPAS	28	O	HDDATA8	44	I	DATA4	60	I	TADD5
13	O	TSTCOMPAS	29	O	NHDLATCH	45	I	DATA3	61	I	TADD6
14	O	TSTCOMPAS	30	O	HDCLK	46	I	DATA2	62	I	CLK1S4
15	O	TSTCOMPAS	31	—	VDD	47	I	DATA1	63	—	GND
16	O	TSTCOMPAS	32	O	NHDLATCH	48	I	DATA0	64	I	CLK

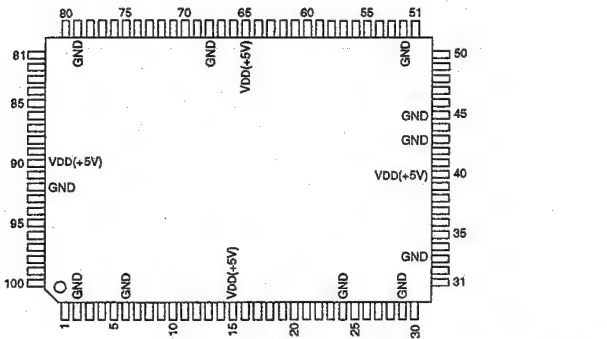
CXD8865R (HITACHI)
C-MOS GATE ARRAY
—TOP VIEW—



PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	D46	21	I	D24	41	—	GND	61	I	A7
2	I	D45	22	I	D23	42	O	CLK2	62	—	GND
3	I	D44	23	I	D22	43	—	VDD	63	I	A6
4	I	D43	24	I	D21	44	O	CLK4	64	I	A5
5	I	D42	25	I	D20	45	I	LINN	65	I	A4
6	I	D41	26	I	HEADACTN	46	I	ONNOFF	66	I	A3
7	I	D40	27	I	PRINTPLS	47	I	S2	67	I	A2
8	I	D36	28	I	D16	48	I	S1	68	I	A1
9	I	D35	29	I	D15	49	I	S0	69	I	A0
10	I	D34	30	I	D14	50	I	REN	70	I	RESETN
11	I	D33	31	I	D13	51	I	WEN	71	O	OUT7
12	—	GND	32	I	D12	52	I/O	D7	72	O	OUT6
13	I	D32	33	I	D11	53	I/O	D6	73	O	OUT5
14	I	D31	34	I	D10	54	I/O	D5	74	O	OUT4
15	I	D30	35	I	LATCHN	55	I/O	D4	75	O	OUT3
16	—	VDD	36	O	TEST7	56	I/O	D3	76	O	OUT2
17	O	STBN	37	O	TEST8	57	I/O	D2	77	O	OUT1
18	—	GND	38	—	VDD	58	I/O	D1	78	O	OUT0
19	I	D26	39	O	TEST9	59	I/O	D0	79	O	XTALM
20	I	D25	40	O	CLK	60	I	A8	80	—	VDD

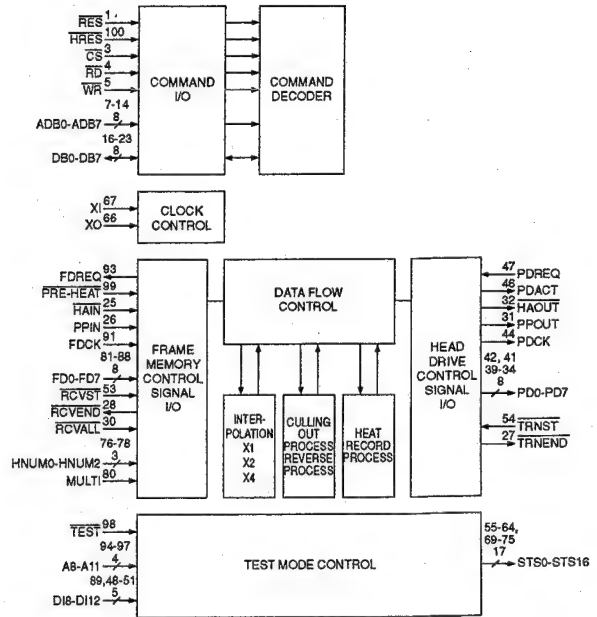
CXD8909Q (RICOH)

C-MOS CONTROLL THE PICTURE QUALITY OF THE VIDEO PRINTERS
—TOP VIEW—



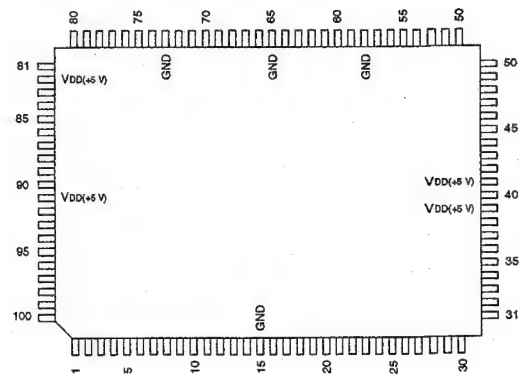
PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	RES	21	I/O	DB5	41	O	PD1	61	O	STS6	81	I	FD0	101	I	TEST
2	—	GND	22	I/O	DB6	42	O	PD0	62	O	STS7	82	I	FD1	102	I	TEST
3	I	CS	23	I/O	DB7	43	—	GND	63	O	STS8	83	I	FD2	103	I	TEST
4	I	RD	24	—	GND	44	O	PDCK	64	O	STS9	84	I	FD3	104	I	TEST
5	I	WR	25	I	HAIN	45	—	GND	65	—	VDD	85	I	FD4	105	I	TEST
6	—	GND	26	I	PPIN	46	O	PDACK	66	I	XO	86	I	FD5	106	I	TEST
7	I	ADB0	27	O	TRNEND	47	I	PDREQ	67	I	XI	87	I	FD6	107	I	TEST
8	I	ADB1	28	O	RCVEND	48	I	DI8	68	—	GND	88	I	FD7	108	I	TEST
9	I	ADB2	29	—	GND	49	I	DI10	69	O	STS10	89	I	DI8	109	I	TEST
10	I	ADB3	30	I	RCVALL	50	I	DI11	70	O	STS11	90	—	VDD	110	I	TEST
11	I	ADB4	31	O	PPOUT	51	I	DI12	71	O	STS12	91	I	FDCK	111	I	TEST
12	I	ADB5	32	O	HAOUT	52	—	GND	72	O	STS13	92	—	GND	112	I	TEST
13	I	ADB6	33	—	GND	53	I	RCVST	73	O	STS14	93	O	FDREQ	113	I	TEST
14	I	ADB7	34	O	PD7	54	I	TRNST	74	O	STS15	94	I	A8	114	I	TEST
15	—	VDD	35	O	PD6	55	O	STS0	75	O	STS16	95	I	A9	115	I	TEST
16	I/O	DB0	36	O	PD5	56	O	STS1	76	I	HNUM0	96	I	A10	116	I	TEST
17	I/O	DB1	37	O	PD4	57	O	STS2	77	I	HNUM1	97	I	A11	117	I	TEST
18	I/O	DB2	38	O	PD3	58	O	STS3	78	I	HNUM2	98	I	TEST	118	I	TEST
19	I/O	DB3	39	O	PD2	59	O	STS4	79	—	GND	99	I	PRE-HEAT	119	I	TEST
20	I/O	DB4	40	—	VDD	60	O	STS5	80	I	MULTI	100	I	HRES	120	I	TEST

INPUT		14	ADB7	PD7	34
A8-A11	: INNER INPUT	13	ADB6	PD6	35
ADB0-ADB7	: ADDRESS	12	ADB5	PD5	36
CS	: CHIP SELECT	11	ADB4	PD4	37
DI8-DI12	: INNER INPUT	10	ADB3	PD3	38
FD0-FD7	: PRINT DATA	9	ADB2	PD2	39
FDCK	: PRINT DATA WRITE CLOCK	8	ADB1	PD1	40
HAIN	: INDIVIDUAL COLOR PRINT STATE (BEFORE DELAY)	7	ADB0	PD0	41
HNUM0-HNUM2	: HEAD NUMBER SETTING	23	DB7	PDACK	46
HRES	: HOT RESET	22	DB6	HAOUT	32
MULTI	: MONO/MULTI SELECT	21	DB5	PPOUT	31
PDREQ	: PRINT DATA REQUEST	20	DB4	PDCK	44
PPIN	: PRINT TIMING PULSE (BEFORE DELAY)	19	DB3	TRNEND	27
PRE-HEAT	: PRE-HEAT MODE SELECT	18	DB2	—	—
RCVALL	: FRAME DATA 1 LINE INPUT END	17	DB1	FDREQ	93
RCVST	: FRAME DATA INPUT START(PQC)	16	DB0	RCVEND	28
RD	: READ	15	—	—	—
RES	: RESET	14	—	—	—
TEST	: TEST MODE SELECT	88	FD7	STS16	75
TRNST	: PRINT DATA OUTPUT START(PQC)	87	FD6	STS15	74
WR	: WRITE	86	FD5	STS14	73
XO, XI	: CLOCK	85	FD4	STS13	72
OUTPUT		84	FD3	STS12	71
FDREQ	: PRINT DATA REQUEST	83	FD2	STS11	70
HAOUT	: INDIVIDUAL COLOR PRINT STATE	82	FD1	STS10	69
PD0-PD7	: PRINT DATA	81	FD0	STS9	68
PDACK	: PRINT DATA TRANSFER ACTIVE	1	RES	STS7	62
PDCK	: PRINT DATA WRITE CLOCK	100	HRES	STS6	61
PPOUT	: PRINT TIMING PULSE	3	CS	STS5	60
RCVEND	: FRAME DATA INPUT END(PQC)	4	RD	STS4	59
STS0-STS16	: INNER STATUS	5	WR	STS3	58
TRNEND	: PRINT DATA OUTPUT END(PQC)	67	XI	STS1	56
INPUT/OUTPUT		68	XO	STS0	55
DB0-DB7	: DATA	99	PRE-HEAT	A11	97
		23	HAIN	A10	96
		28	PPIN	A9	95
		91	FDCK	A8	94
		53	RCVST	—	—
		30	RCVALL	DI12	51
		76	HNUM0	DI11	50
		77	HNUM1	DI10	49
		78	HNUM2	DI9	48
		80	MULTI	DI8	47
		47	PDREQ	TEST	98
		54	TRNST	—	—



CXD8869Q (SONY)

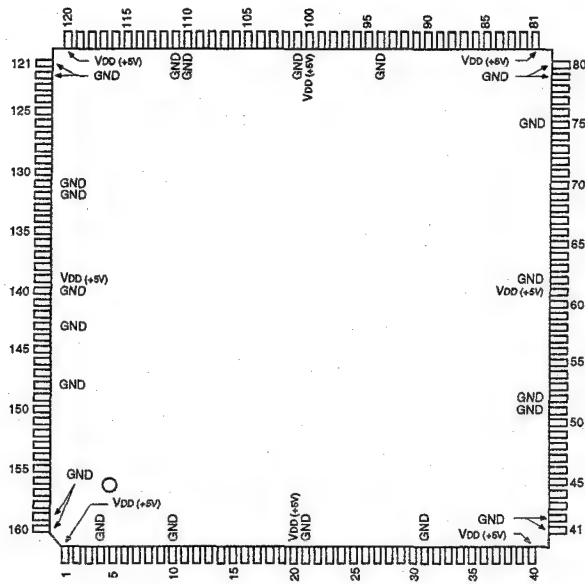
C-MOS CELL BASE IC
—TOP VIEW—



PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I/O	B7	21	I/O	R4	41	—	VDD	61	I/O	OUTR6	81	I	REV	101	I	TEST
2	I/O	B6	22	I/O	R3	42	I	A3	62	I/O	OUTR7	82	—	VDD	102	I	TEST
3	I/O	B5	23	I/O	R2	43	I	A4	63	I/O	OUTR8	83	O	OUTP80	103	I	TEST
4	I/O	B4	24	I/O	R1	44	I	A5	64	I/O	OUTR9	84	O	OUTP81	104	I	TEST
5	I/O	B3	25	I/O	R0	45	I	A6	65	—	GND	85	O	OUTP82	105	I	TEST
6	I/O	B2	26	I	RDN	46	I	A7	66	I/O	OUTR0	86	O	OUTP83	106	I	TEST
7	I/O	B1	27	I	WRN	47	I	A8	67	I/O	OUTR1	87	O	OUTP84	107	I	TEST
8	I/O	B0	28	I/O	D7	48	I	A9	68	I/O	OUTR2	88	O	OUTP85	108	I	TEST
9	I/O	G7	29	I/O	D6	49	I	A10	69	I/O	OUTR3	89	O	OUTP86	109	I	TEST
10	I/O	G6	30	I/O	D5	50	I	CS1N	70	I/O	OUTR4	90	O	OUTP87	110	I	TEST
11	I/O	G5	31	I/O	D4	51	I	CS2N	71	I/O	OUTR5	91	—	VDD	111	I	TEST
12	I/O	G4	32	I/O	D3	52	I	CS3	72	I/O	OUTR6	92	I	CLK2	112	I	TEST
13	I/O	G3	33	I/O	D2	53	I	CS4	73	—	GND	93	I	TEST	113	I	TEST
14	I/O	G2	34	I/O	D1	54	I/O	OUTR0	74	I/O	OUTR1	94	O	Y6N	114	I	TEST
15	—	GND	35	I/O	D0	55	I/O	OUTR1	75	I/O	OUTR2	95	O	Y7N	115	I	TEST
16	I/O	G1	36	I	A0	56	I/O	OUTR2	76	I/O	OUTR3	96	I	BE0	116	I	TEST
17	I/O	G0	37	I	A1	57	I/O	OUTR3	77	I/O	OUTR4	97	I	BE1	117	I	TEST
18	I/O	R7	38	I	A2	58	—	GND	78	I/O	OUTR5	98	I	BE2	118	I	TEST
19	I/O	R6	39	—	VDD	59	I/O	OUTR4	79	I/O	OUTR6	99	I	CLK1	119	I	TEST
20	I/O	R5	40	I	RESETN	60	I/O	OUTR5	80	I/O	OUTR7	100	I	OE1N	120	I	TEST

CXD8911Q (SONY)

C-MOS GATE ARRAY —TOP VIEW—

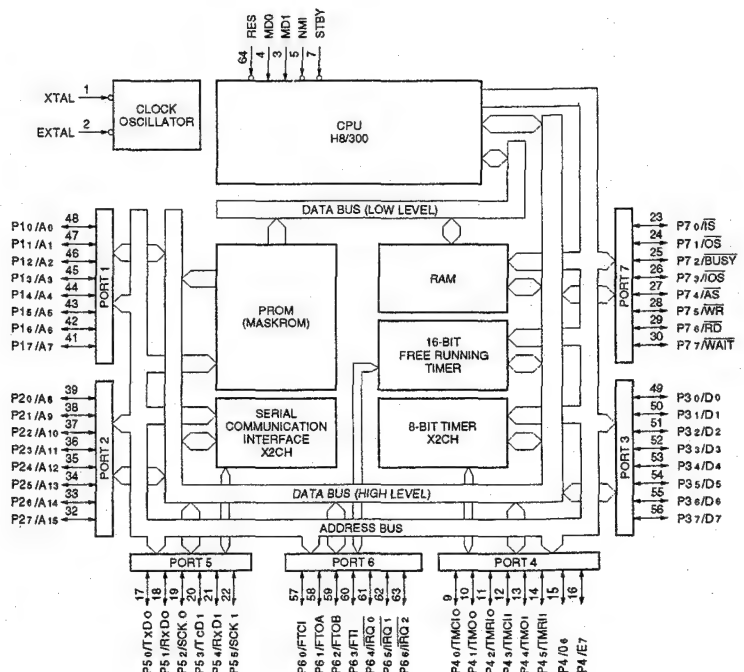
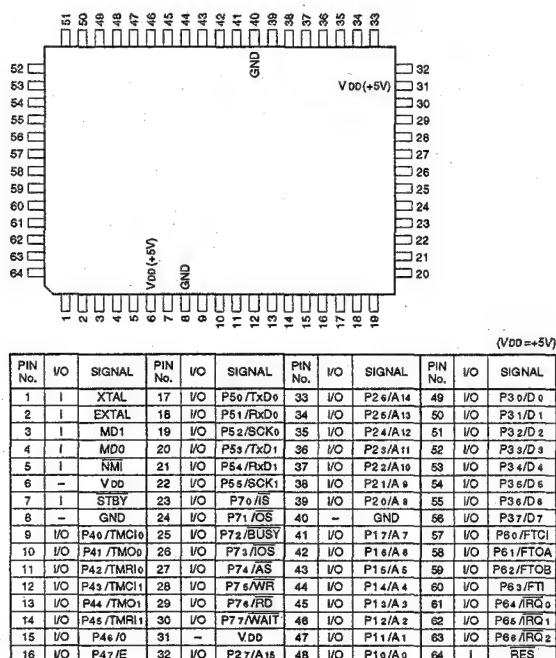


(VDD = +5V)

PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	—	VDD	33	I/O	BD6	65	O	AA9	97	O	RAS0	129	I/O	BD06
2	I/O	EXTAL	34	I/O	BD5	66	O	AA8	98	O	RAS01	130	I/O	BD07
3	I/O	XTAL	35	I/O	BD4	67	O	AA7	99	—	N.C	131	—	GND
4	—	GND	36	I/O	BD3	68	O	AA6	100	—	VDD	132	—	GND
5	I/O	CS0	37	I/O	BD2	69	O	AA5	101	—	GND	133	O	ROE
6	I/O	CS1	38	I/O	BD1	70	O	AA4	102	I/O	R000	134	O	GOE
7	I/O	RESEY	39	I/O	BD0	71	O	AA3	103	I/O	R001	135	O	BOE
8	I/O	RD	40	—	VDD	72	O	AA2	104	I/O	R002	136	O	RWE
9	I/O	WR	41	—	GND	73	O	AA1	105	I/O	R003	137	O	GWE
10	—	GND	42	—	GND	74	O	AA0	106	I/O	R004	138	O	BWE
11	I/O	D7	43	I/O	GD7	75	—	GND	107	I/O	R005	139	—	VDD
12	I/O	D6	44	I/O	GD6	76	I/O	CAS89	108	I/O	R006	140	—	GND
13	I/O	D5	45	I/O	GD5	77	I/O	CAS67	109	I/O	R007	141	I	TEST1
14	I/O	D4	46	I/O	GD4	78	I/O	CAS45	110	—	GND	142	I	TEST2
15	I/O	D3	47	I/O	GD3	79	—	GND	111	—	GND	143	—	GND
16	I/O	D2	48	I/O	GD2	80	—	GND	112	I/O	G000	144	O	DMACK1
17	I/O	D1	49	I/O	GD1	81	—	VDD	113	I/O	G001	145	O	DMACK2
18	I/O	D0	50	I/O	GD0	82	O	CAS23	114	I/O	G002	146	O	DMACK3
19	—	N.C	51	—	GND	83	O	CAS01	115	I/O	G003	147	O	DMACK4
20	—	VDD	52	—	GND	84	O	CAS9	116	I/O	G004	148	—	GND
21	—	GND	53	I/O	RD7	85	O	CAS8	117	I/O	G005	149	I	E
22	I/O	A0	54	I/O	RD6	86	O	CAS7	118	I/O	G006	150	I	NEXT
23	I/O	A1	55	I/O	RD5	87	O	CAS6	119	I/O	G007	151	O	DINREQ
24	I/O	A2	56	I/O	RD4	88	O	CAS5	120	—	VDD	152	I	DINACK
25	I/O	A3	57	I/O	RD3	89	O	CAS4	121	—	GND	153	I	DOUTHREQ
26	I/O	R/W	58	I/O	RD2	90	O	CAS3	122	—	GND	154	O	DOUTHACK
27	I	R	59	I/O	RD1	91	O	CAS2	123	I/O	B000	155	O	BUSY
28	I	G	60	I/O	RD0	92	O	CAS1	124	I/O	B001	156	I	RSTOP
29	I	S	61	—	VDD	93	O	CAS0	125	I/O	B002	157	I	RREQ
30	I	TEST3	62	—	GND	94	—	GND	126	I/O	B003	158	O	REFRESH
31	—	GND	63	O	AA11	95	O	RAS2	127	I/O	B004	159	—	GND
32	I/O	BD7	64	O	AA10	96	O	RAS1	128	I/O	B005	160	—	GND

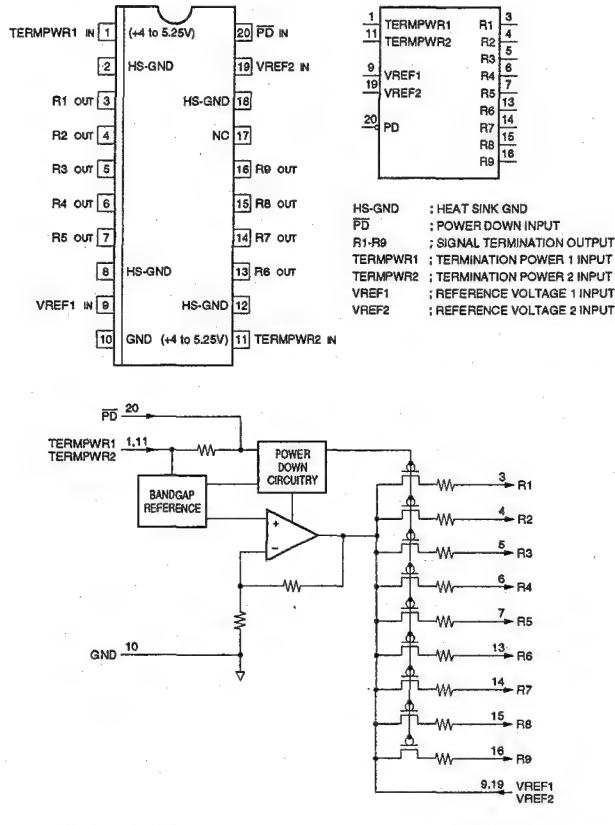
HD6433228A69F (HITACHI) FLAT PACKAGE

C-MOS 8-BIT SINGLE CHIP MICRO COMPUTER —TOP VIEW—



DS21S07AE (DALLAS) FLAT PACKAGE

SCSI TERMINATOR —TOP VIEW—



INPUT

ADTRG : TRIGGER FOR A/D CONVERTER
 AGND : GND FOR A/D CONVERTER
 AN0-AN7 : ANALOG
 AVDD : REFERENCE VOLTAGE FOR A/D CONVERTER
 EXTAL : CRYSTAL OSCILLATOR & EXTERNAL CLOCK (1/2 CLOCK x 2)

FTCI : FRT COUNTER CLOCK
 FTIA-FTID : FRT INPUT CAPTURE
 IRQ0-IRQ7 : INTERRUPT REQUEST
 MD0,MD1 : MODE SETTING
 NMI : NON-MASKABLE INTERRUPT
 P70-P77 : PORT 7
 RES : RESET
 RXD0,RXD1 : RECEIVE DATA
 SCK0,SCK1 : SERIAL CLOCK
 STBY : STANDBY
 TMC10,TMC11 : 8-BIT TIMER CLOCK
 TMR10,TMR11 : 8-BIT TIMER COUNTER RESET
 WAIT : WAIT
 XTAL : CRYSTAL OSCILLATOR (1/2 CLOCK x 2)

OUTPUT

1 : SYSTEM CLOCK
 A0-A15 : ADDRESS BUS
 AS : ADDRESS STROBE
 DA0,DA1 : D/A CONVERTER DATA
 FTOA,FTOS : FRT OUTPUT COMPEA
 PW0,PW1 : PWM TIME
 RD : READ
 TMO0,TMO1 : 8-BIT TIMER
 TXD0,TXD1 : TRANSMIT DATA
 WR : WRITE

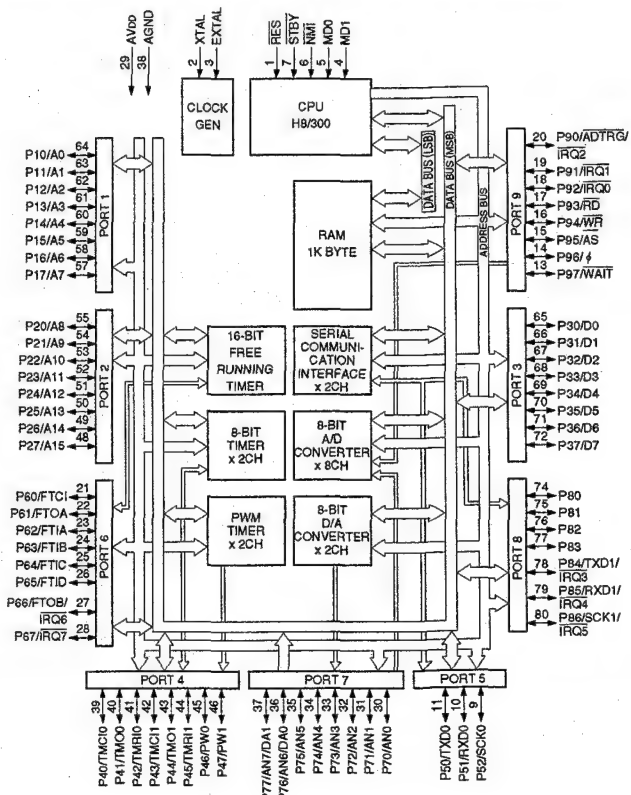
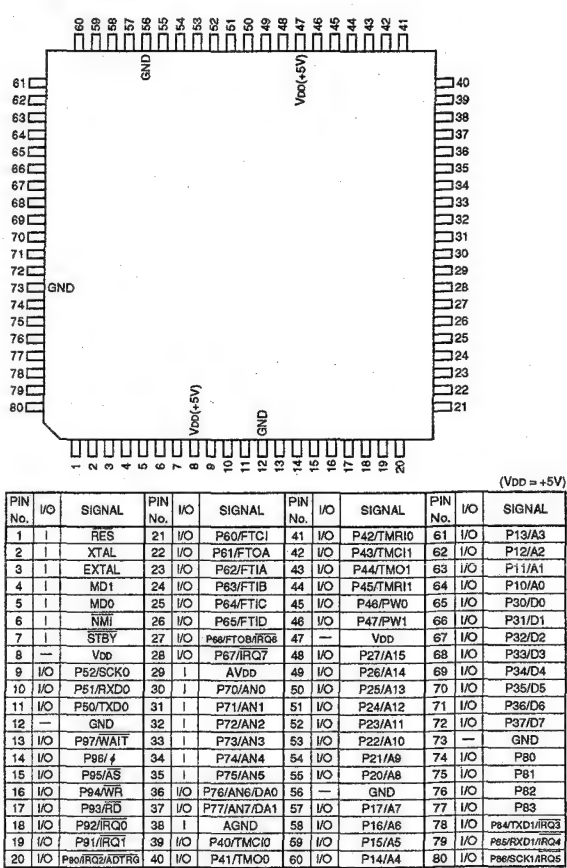
INPUT/OUTPUT

D0-D7 : DATA BUS
 P10-P17 : PORT 1
 P20-P27 : PORT 2
 P30-P37 : PORT 3
 P40-P47 : PORT 4
 P50-P57 : PORT 5
 P60-P67 : PORT 6
 P80-P86 : PORT 8
 P90-P97 : PORT 9

55	P20/A8	P10/A0	64
54	P21/A9	P11/A1	63
53	P22/A10	P12/A2	62
52	P23/A11	P13/A3	61
51	P24/A12	P14/A4	60
50	P25/A13	P15/A5	59
49	P26/A14	P16/A6	58
48	P27/A15	P17/A7	57
39	P40/TMC10	P30/D0	65
40	P41/TMO0	P31/D1	66
41	P42/TMR10	P32/D2	67
42	P43/TMC11	P33/D3	68
43	P44/TMO1	P34/D4	69
44	P45/TMR11	P35/D5	70
45	P46/PW0	P36/D6	71
46	P47/PW1	P37/D7	72
21	P60/FTCI	P60/TXD0	11
22	P61/FTOA	P61/RXD0	10
23	P62/FTIA	P52/SCK0	9
24	P63/FTIB		
25	P64/FTIC		
26	P65/FTID		
27	P66/FTOB/IRQ6		
28	P67/IRQ7		
74	P80	P70/AN0	30
75	P81	P71/AN1	31
76	P82	P72/AN2	32
77	P83	P73/AN3	33
		P74/AN4	34
78	P84/TXD1/IRQ3	P75/AN5	35
		P76/AN6/DA0	36
79	P85/RXD1/IRQ4	P77/AN7/DA1	37
80	P86/SCK1/IRQ5		20
2	XTAL	P91/IRQ1	19
3	EXTAL	P92/IRQ0	18
		P93/RD	17
		P94/WR	16
1	RES	P95/AS	15
7	STBY	P96/1	14
		P97/WAIT	13
5	NMI		
6	MD0		
4	MD1		
29	AVDD		
36	AGND		

HD6413378F10 (HITACHI) FLAT PACKAGE

C-MOS 8-BIT 1CHIP CPU (ROM LESS) —TOP VIEW—



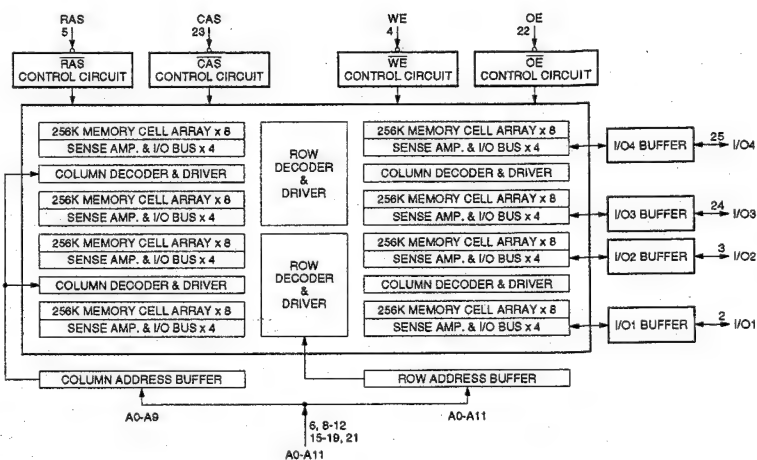
NC	15		4	(+)OUTPUT VOLTAGE DETECT
	14	RESISTOR CONNECT IN	5	OUTPUT VOLTAGE VARIABLE
NC	13		6	SWITCHING FREQUENCY SYNC CONTROL
NC	12		7	REMOTE CONTROL DRIVE
	11	DRIVE OUT	10	(+)
	10	(+) IN	9	TEST
	9	TEST	14	REGISTER CONNECT
GND	8			
	7	REMOTE CONTROL IN		
	6	SWITCHING FREQUENCY SYNC CONTROL IN		
	5	OUTPUT VOLTAGE VARIABLE IN		
	4	(+)OUTPUT VOLTAGE DETECT IN		
NC	3	HANG SET		
NC	2	CURRENT DETECT		
GND	1			

Pin	Function
1	GND
2	L OUT
3	(+) IN
4	REMOTE CONTROL IN
5	NC
6	SWITCHING FREQUENCY SYNC CONTROL IN
7	GND
8	OUTPUT VOLTAGE VARIABLE IN
9	(+)OUTPUT VOLTAGE DETECT IN
10	CURRENT DETECT IN

Pin	Function
4	REMOTE CONTROL
6	SWITCHING FREQUENCY SYNC CONTROL
8	OUTPUT VOLTAGE VARIABLE
9	(+)OUTPUT VOLTAGE DETECT
10	CURRENT DETECT
3	(+)

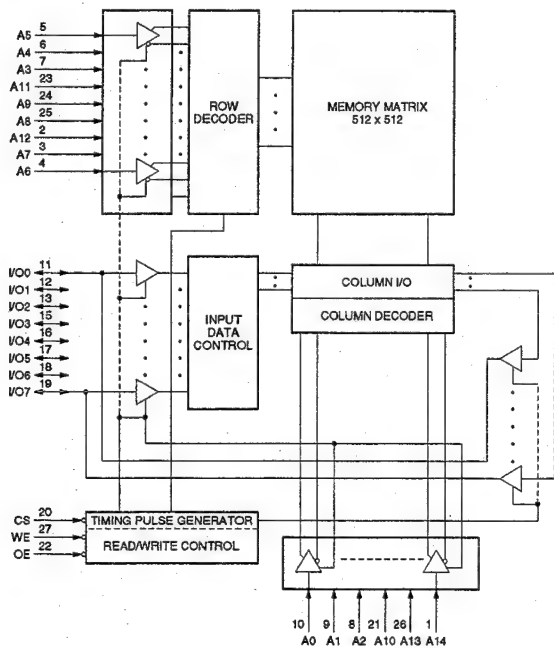
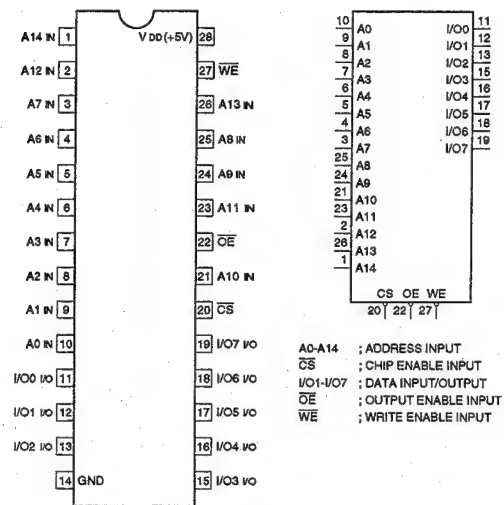
Pin diagram of the 28-pin DIP package for the 6264 8Kbit 1M16C16 Static CMOS RAM. The diagram shows pins 1 through 28 with their respective functions. Pins 1 and 28 are VDD (+5V), and pins 27 and 26 are GND. The address inputs (A0-A11) are on pins 26-35. The column address strobe input (CAS) is on pin 36. The data input/output (I/O1-I/O4) are on pins 37-40. The output enable input (OE) is on pin 41. The row address strobe input (RAS) is on pin 42. The read/write enable input (WE) is on pin 43.

Pin	Function
1	VDD (+5V)
2	I/O1 I/O
3	I/O2 I/O
4	WE IN
5	RAS IN
6	A11 IN
7	A10 IN
8	A9 IN
9	A8 IN
10	A7 IN
11	A6 IN
12	A5 IN
13	A4 IN
14	A3 IN
15	A2 IN
16	A1 IN
17	A0 IN
18	CAS IN
19	I/O4 I/O
20	I/O3 I/O
21	I/O2 I/O
22	I/O1 I/O
23	A11 IN
24	A10 IN
25	A9 IN
26	A8 IN
27	A7 IN
28	A6 IN
29	A5 IN
30	A4 IN
31	A3 IN
32	A2 IN
33	A1 IN
34	A0 IN
35	CAS IN
36	I/O4 I/O
37	I/O3 I/O
38	I/O2 I/O
39	I/O1 I/O
40	A11 IN
41	A10 IN
42	A9 IN
43	A8 IN
44	A7 IN
45	A6 IN
46	A5 IN
47	A4 IN
48	A3 IN
49	A2 IN
50	A1 IN
51	A0 IN
52	CAS IN
53	I/O4 I/O
54	I/O3 I/O
55	I/O2 I/O
56	I/O1 I/O
57	A11 IN
58	A10 IN
59	A9 IN
60	A8 IN
61	A7 IN
62	A6 IN
63	A5 IN
64	A4 IN
65	A3 IN
66	A2 IN
67	A1 IN
68	A0 IN
69	CAS IN
70	I/O4 I/O
71	I/O3 I/O
72	I/O2 I/O
73	I/O1 I/O
74	A11 IN
75	A10 IN
76	A9 IN
77	A8 IN
78	A7 IN
79	A6 IN
80	A5 IN
81	A4 IN
82	A3 IN
83	A2 IN
84	A1 IN
85	A0 IN
86	CAS IN
87	I/O4 I/O
88	I/O3 I/O
89	I/O2 I/O
90	I/O1 I/O
91	A11 IN
92	A10 IN
93	A9 IN
94	A8 IN
95	A7 IN
96	A6 IN
97	A5 IN
98	A4 IN
99	A3 IN
100	A2 IN
101	A1 IN
102	A0 IN
103	CAS IN
104	I/O4 I/O
105	I/O3 I/O
106	I/O2 I/O
107	I/O1 I/O
108	A11 IN
109	A10 IN
110	A9 IN
111	A8 IN
112	A7 IN
113	A6 IN
114	A5 IN
115	A4 IN
116	A3 IN
117	A2 IN
118	A1 IN
119	A0 IN
120	CAS IN
121	I/O4 I/O
122	I/O3 I/O
123	I/O2 I/O
124	I/O1 I/O
125	A11 IN
126	A10 IN
127	A9 IN
128	A8 IN
129	A7 IN
130	A6 IN
131	A5 IN
132	A4 IN
133	A3 IN
134	A2 IN
135	A1 IN
136	A0 IN
137	CAS IN
138	I/O4 I/O
139	I/O3 I/O
140	I/O2 I/O
141	I/O1 I/O
142	A11 IN
143	A10 IN
144	A9 IN
145	A8 IN
146	A7 IN
147	A6 IN
148	A5 IN
149	A4 IN
150	A3 IN
151	A2 IN
152	A1 IN
153	A0 IN
154	CAS IN
155	I/O4 I



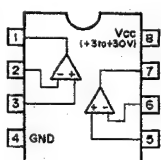
HMT2256ALF (HITACHI) FLAT PACKAGE

C-MOS 32K x 8-BIT HIGH SPEED STATIC RAM
—TOP VIEW—



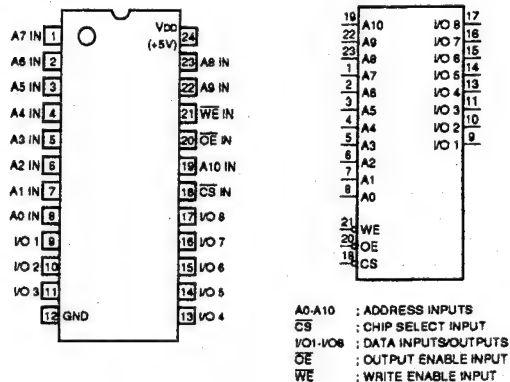
LM358PS (MITSUBISHI)

DUAL OPERATIONAL AMPLIFIERS
—TOP VIEW—



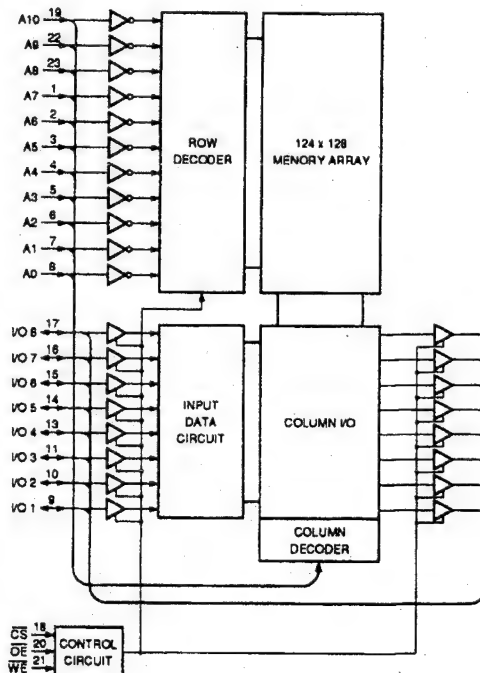
IDT6116SA25S0 (IDT) FLAT PACKAGE

C-MOS 18K (2K x 8)-BIT STATIC RAM
—TOP VIEW—



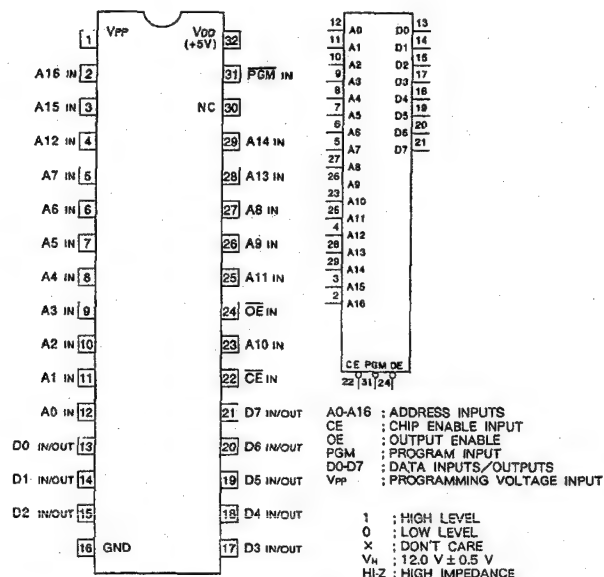
MODE	CS	OE	WE	I/O
STANDBY	1	X	X	HI-Z
READ	0	0	1	DATA OUT
READ	0	1	1	HI-Z
WRITE	0	X	0	DATA IN

0 : LOW LEVEL
1 : HIGH LEVEL
X : DON'T CARE
HI-Z : HIGH IMPEDANCE

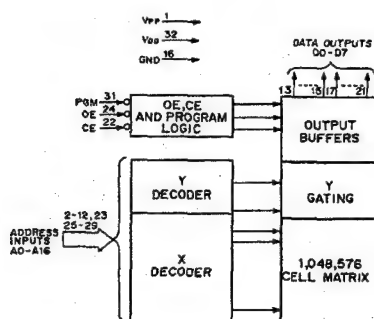


M27C1001-12F1 (SGS)
M27C1001-15F1 (SGS)

C-MOS 1M (128K x 8)-BIT UV EPROM
—TOP VIEW—

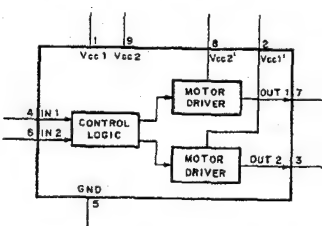
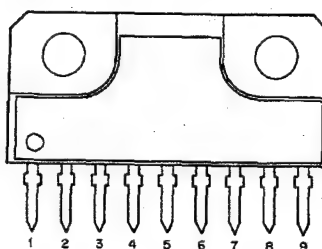


MODE	CE	OE	A9	PGM	Vpp	OUTPUT
READ	0	0	X	X	X	D _{OUT}
OUTPUT DISABLE	0	1	X	X	X	HI-Z
STANDBY	1	X	X	X	X	HI-Z
PROGRAM	0	1	X	0	V _{PP}	D _{IN}
PROGRAM VERIFY	0	0	X	1	V _{PP}	D _{OUT}
PROGRAM INHIBIT	1	X	X	X	V _{PP}	HI-Z
ELECTRONIC SIGNATURE	0	0	V _H	1	V _{DD}	CODE



M54543L (MITSUBISHI)

BI-DIRECTIONAL MOTOR DRIVER
—SIDE VIEW—

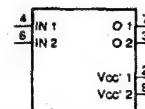
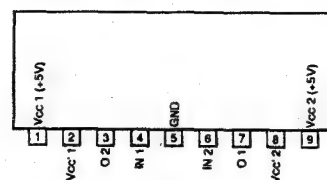


IN	OUT	MODE
1 2 3 2	1 2 3 2	NO OPERATION
0 0 2 2	0 0 2 2	ROTATION
0 1 0 1	0 1 0 1	REVERSE ROTATION
1 1 0 0	1 1 0 0	BRAKE

0 : LOW LEVEL
1 : HIGH LEVEL
2 : HIGH IMPEDANCE

M54544AL (MITSUBISHI)

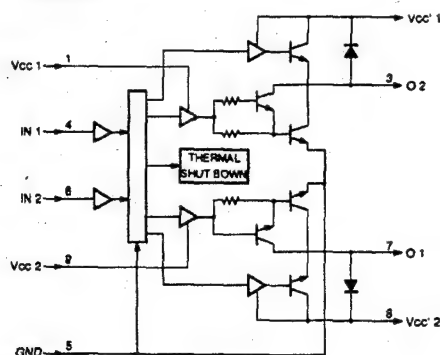
BI-DIRECTIONAL MOTOR DRIVER
WITH THERMAL SHUT DOWN FUNCTION
—PRINTED SIDE VIEW—



Vcc' 1, Vcc' 2 : POWER SOURCE OUTPUT

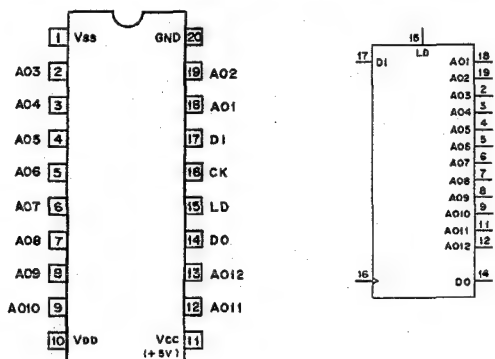
INPUT	OUTPUT	FUNCTION
IN 1 IN 2	O 1 O 2	
0 0	'OFF' STATE 'OFF' STATE	IC PASSIVITY
1 0	1 0	POSITIVE ROTATING
0 1	0 1	NEGATIVE ROTATING
1 1	0 0	BRAKE

0 : LOW LEVEL
1 : HIGH LEVEL



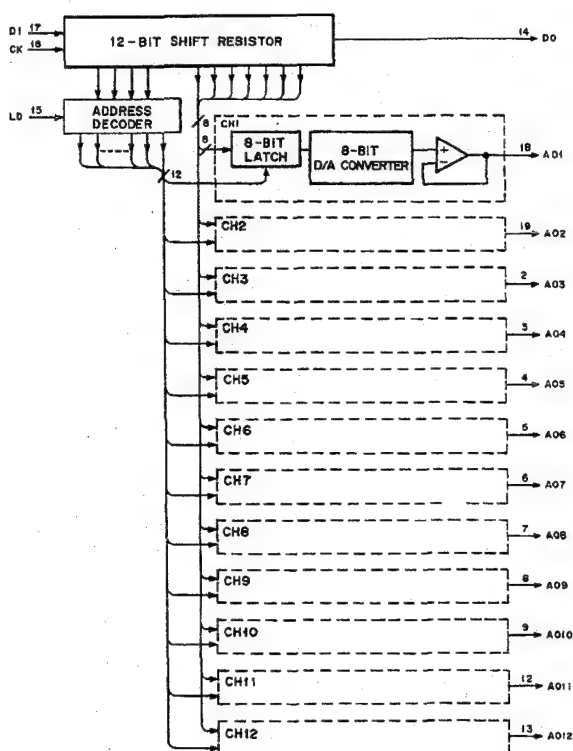
M62352FP (MITSUBISHI) FLAT PACKAGE
M62352P (MITSUBISHI)

C-MOS 8-BITx12 CHANNEL D/A CONVERTER
(WITH BUFFER OPERATIONAL AMPLIFIER)
—TOP VIEW—



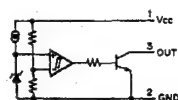
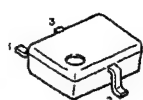
A01 - A012: 8-BIT D/A OUTPUT
CK : CLOCK INPUT
D1 : SERIAL DATA INPUT
DO : DATA OUTPUT

NOTE:
3.5V < VDD < VDD
-3.5V < VSS < VCC



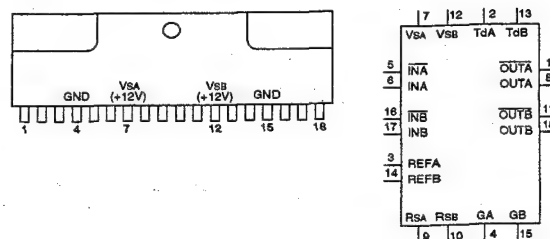
PST572CMT (MITSUBI) Vs=4.5V

VOLTAGE DETECTOR, SYSTEM RESET



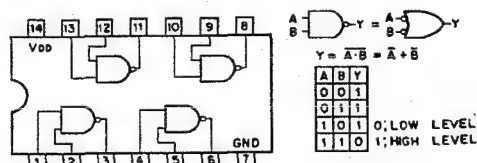
SLA7024M (SANKEN)

STEPPING MOTOR UNIPOLAR DRIVING
—SIDE VIEW—



SN74HC00ANS (TI) FLAT PACKAGE

C-MOS QUAD 2-INPUT NAND GATE
—TOP VIEW—

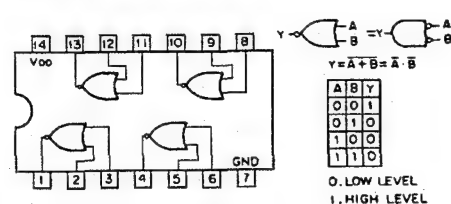


NOTE:

TYPE	VDD
TC74AC00P	+2 to +5.5V
TC74AC00F	+5V
MC74HCT00N	+5V
74ACT00PC	+2 to +6V
OTHER TYPES	+2 to +6V

SN74HC02ANS (TI) FLAT PACKAGE

C-MOS QUAD 2-INPUT NOR GATE
—TOP VIEW—

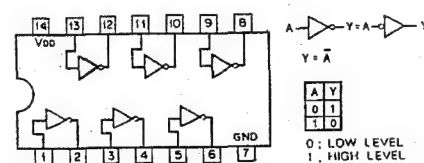


NOTE:

TYPE	VDD
TC74AC02F	+2 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC04ANS (TI) FLAT PACKAGE

C-MOS HEX INVERTERS
—TOP VIEW—

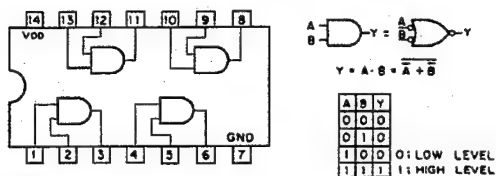


NOTE:

TYPE	VDD
74HCT04 TYPE	+5V
74VHC	+2 to +5.5V
TC74AC04 TYPE	+4.5 to +5.5V
74ACT04 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC08ANS (TI) FLAT PACKAGE

C-MOS QUAD 2-INPUT AND GATE
—TOP VIEW—

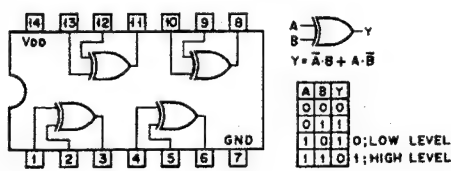


NOTE:

TYPE	V _{DD}
TC74AC08F	+2 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC86ANS (TI) FLAT PACKAGE

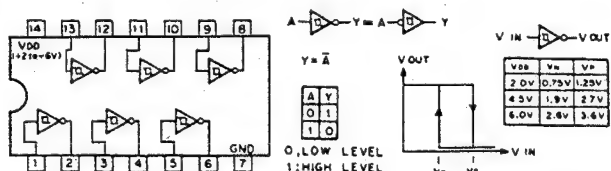
C-MOS EXCLUSIVE OR GATES
—TOP VIEW—



TYPE	V _{DD}
TC74AC86F	+2 to +5.5V
OTHER TYPES	+2 to +6V

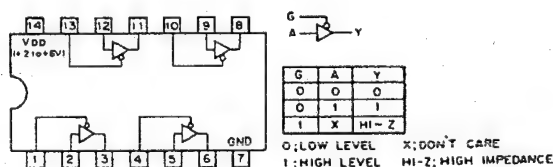
SN74HC14ANS (TI) FLAT PACKAGE

C-MOS QUAD 2-INPUT AND GATE
—TOP VIEW—



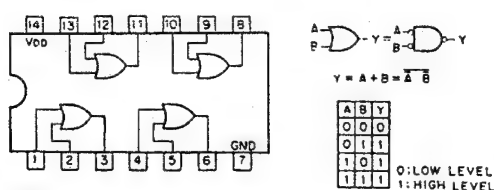
SN74HC125ANS (TI) FLAT PACKAGE

C-MOS BUS BUFFER GATE WITH 3-STATE OUTPUT
—TOP VIEW—



SN74HC32ANS (TI) FLAT PACKAGE

C-MOS 2-INPUT OR GATE
—TOP VIEW—

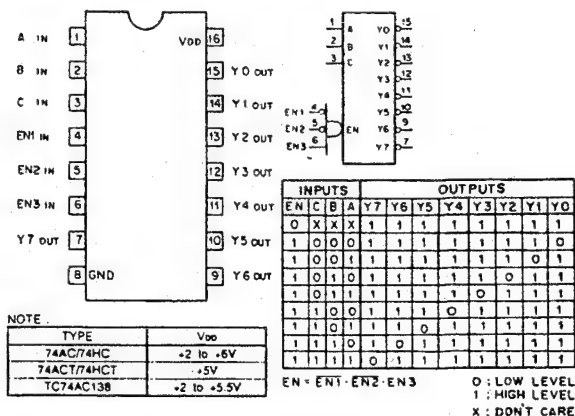


NOTE:

TYPE	V _{DD}
TC74AC32	+2 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC138ANS (TI) FLAT PACKAGE

C-MOS 3-TO-8 LINE DECODER/DEMULTIPLEXER
—TOP VIEW—

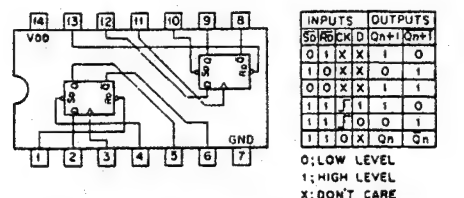


NOTE:

TYPE	V _{DD}
74ACT74HC	+2 to +6V
74ACT74HCT	+5V
TC74AC138	+2 to +5.5V

SN74HC74ANS (TI) FLAT PACKAGE

C-MOS D-TYPE FLIP FLOP WITH DIRECT SET/RESET
—TOP VIEW—

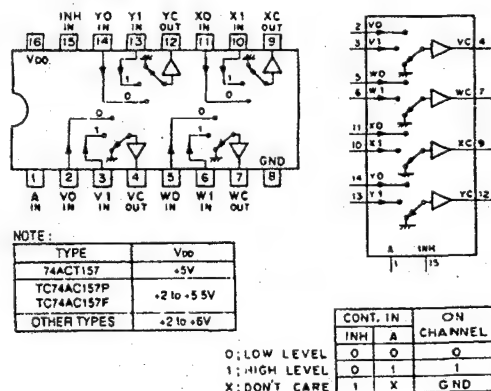


NOTE:

TYPE	V _{DD}
74ACT	+5V
TC74ACT74F	+2 to +5.5V
TC74ACT74F	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC157ANS (TI) FLAT PACKAGE

C-MOS QUAD 2-LINE-TO-LINE DATA
SELECTOR/MULTIPLEXER
—TOP VIEW—

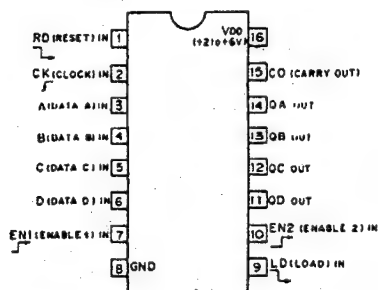


NOTE:

TYPE	V _{DD}
74ACT157	+5V
TC74AC157P	+2 to +5.5V
TC74AC157F	+2 to +6V
OTHER TYPES	+2 to +6V

SN74HC161ANS (TI) FLAT PACKAGE

C-MOS SYNCHRONOUS PRESETTABLE 4-BIT BINARY COUNTER
—TOP VIEW—



MODE SELECTION				
CONTROL INPUT				MODE
RD	LD	EN1	EN2	
0	X	X	X	RESET (ASYNCHRONOUS)
1	0	X	X	PRESET (SYNCHRONOUS)
1	1	0	X	NO COUNT
1	1	X	0	NO COUNT
1	1	1	1	COUNT

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE

CARRY OUTPUT "CO"

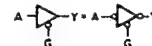
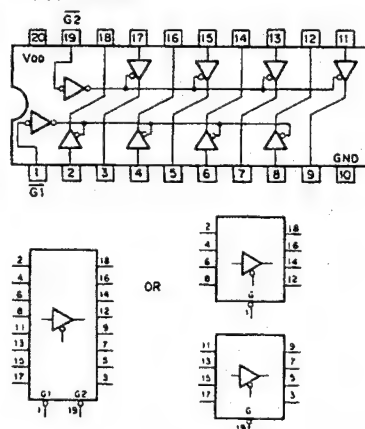


CO IS HIGH WHEN EN2 INPUT IS HIGH AND COUNT IS "15".

COUNT SEQUENCE				
COUNT	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

SN74HC244ANS (TI) FLAT PACKAGE

C-MOS BUS BUFFER WITH 3-STATE OUTPUT
—TOP VIEW—



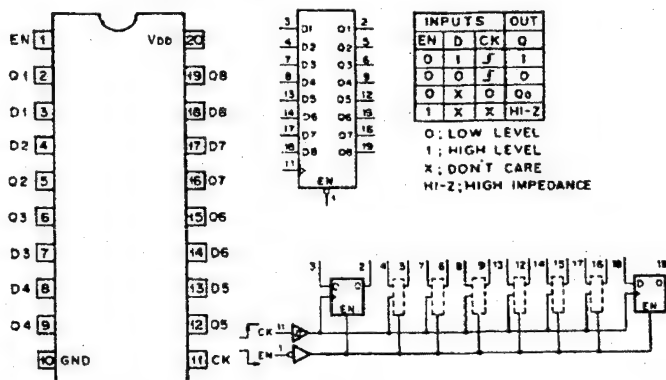
G	A	Y
0	0	0
0	1	1
1	X	HI-Z

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE
HI-Z: HIGH IMPEDANCE

NOTE		VDD
TYPE		
AC		+2 to +6V
HC		+2 to +6V
40H		
ACT		+5V
HCT		

SN74HC374ANS (TI) (VDD=+2 to +8V) FLAT PACKAGE

C-MOS 3-STATE OCTAL D-TYPE FLIP-FLOP
—TOP VIEW—

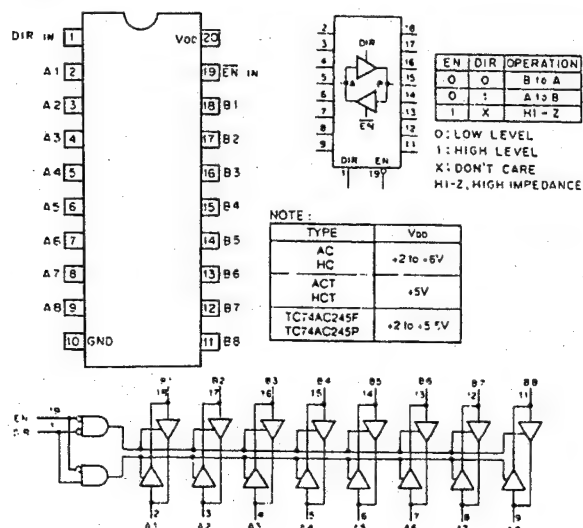


INPUTS				OUT
EN	D	CK	Q	
0	1	1	1	1
0	0	1	0	0
0	X	0	Qn	Qn
1	X	X	HI-Z	HI-Z

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE
HI-Z: HIGH IMPEDANCE

SN74HC245ANS (TI) FLAT PACKAGE

C-MOS BILATERAL BUS TRANSCEIVERS WITH 2-STATE OUTPUT
—TOP VIEW—



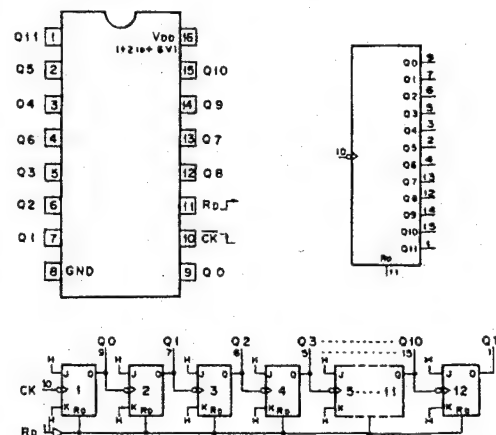
EN/DIR OPERATION		
EN	DIR	OPERATION
0	0	B to A
0	1	A to B
1	X	HI-Z

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE
HI-Z: HIGH IMPEDANCE

NOTE		VDD
TYPE		
AC		+2 to +6V
HC		+2 to +6V
ACT		+5V
HCT		
TC74AC245F		+2 to +5.5V
TC74AC245P		

SN74HC4040ANS (TI) FLAT PACKAGE

C-MOS 12-STAGE RIPPLE CARRY BINARY COUNTER/DRIVER
—TOP VIEW—

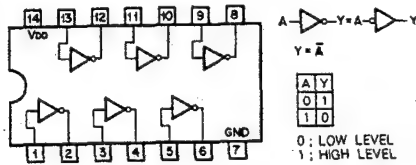


COUNT	Q11	Q10	Q9	Q8	Q7	Q6	Q5	Q4	Q3	Q2	Q1	Q0
0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	1	0
3	0	0	0	0	0	0	0	0	0	0	1	1
...
4095	1	1	1	1	1	1	1	1	1	1	1	1

0: LOW LEVEL
1: HIGH LEVEL

SN74HCU04ANS (TI) FLAT PACKAGE

C-MOS BILATERAL BUS TRANSCEIVERS WITH 2-STATE OUTPUT
—TOP VIEW—

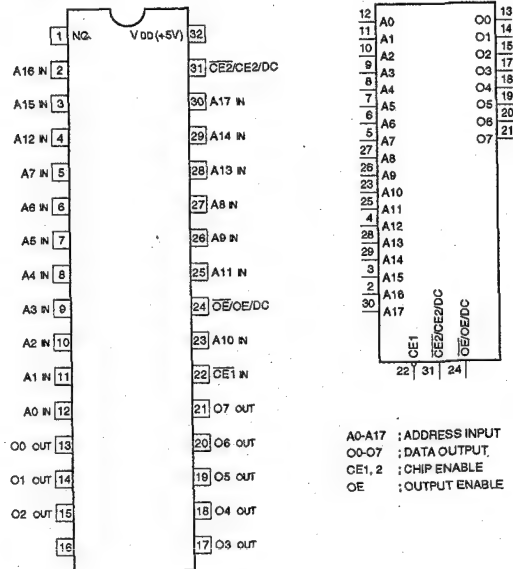


NOTE:

TYPE	V _{DD}
74HCU04 TYPE	+5V
TC74AC04 TYPE	+2 to +5.5V
TC74VHC04 TYPE	+2 to +5.5V
74ACT04 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

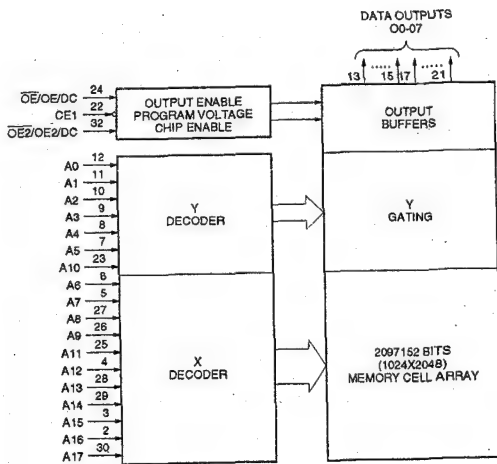
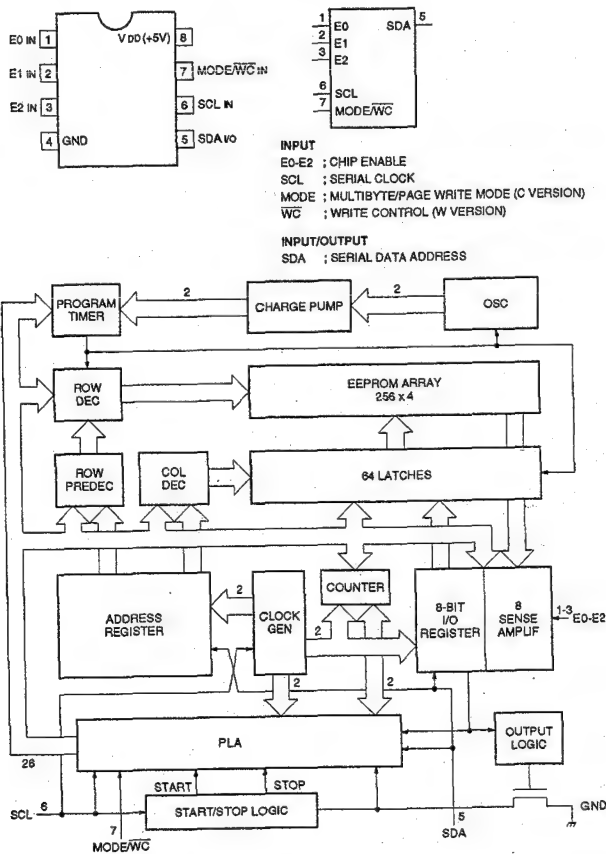
UPD27C2001GW (NEC)

C-MOS 2M (256Kw x 8)-BIT PROM
—TOP VIEW—



ST24C01CB1 (SGS-THOMSON MICRO ELECTRONICS)

C-MOS 1K (256 x 4)-BIT EEPROM
—TOP VIEW—

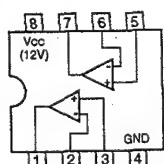


MODE	SYMBOL	CE	OE	PGM	V _{PP}	V _{DD}	O0-O7
READ		0	0	1			D OUT
OUTPUT DISABLE		0	1	X	5V	5V	Hi-Z
STANDBY		1	X	X			Hi-Z
PAGE DATA LATCH		1	0	1			D IN
PAGE PROGRAM		1	1	0			Hi-Z
BYTE PROGRAM		0	1	1	12.5V	6.5V	D OUT
PROGRAM VERIFY		0	0	1			Hi-Z
PROGRAM INHIBIT		X	0	0			Hi-Z
		X	1	1			

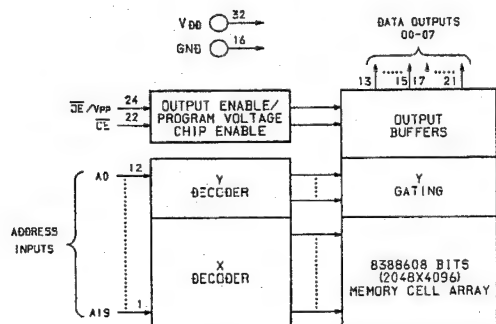
1 : HIGH LEVEL
0 : LOW LEVEL
X : 1 (TTL LEVEL HIGH LEVEL) or 0 (TTL LEVEL LOW LEVEL)
Hi-Z : HIGH IMPEDANCE

TA753581

DUAL OPERATIONAL AMPLIFIER
—TOP VIEW—



C-MOS 8M (1,048,576 x 8)-BIT PROM
—TOP VIEW—



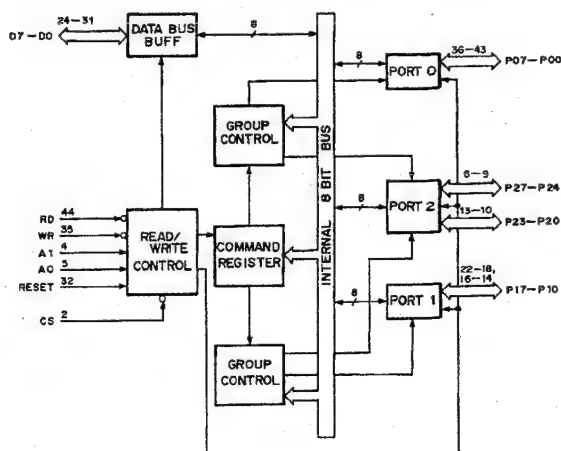
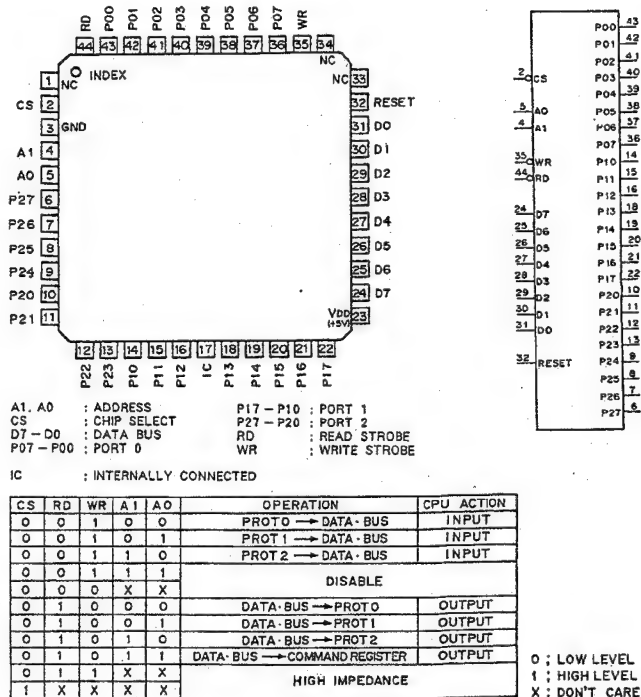
MODE	SYMBOL	\overline{CE}	\overline{OE}/V_{PP}	V_{DD}	00-07
READ		0	0	+5V	$\overline{O}UT$
OUTPUT DISABLE		0	1		H1-Z
STANDBY		1	X		H1-Z
PROGRAM		0	+12.5	+6.5V	$\overline{O}IN$
PROGRAM VERIFY		0	0		$\overline{O}UT$
PROGRAM INHIBIT		1	+12.5		H1-Z

```

1      :HIGH LEVEL
0      :LOW LEVEL
X      :DON'T CARE
HI-Z   :HIGH IMPEDANCE

```

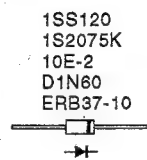
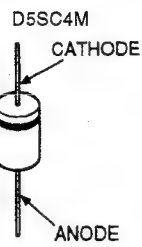
C-MOS PARALLEL INTERFACE UNIT
—TOP VIEW—



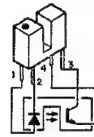
2SA673



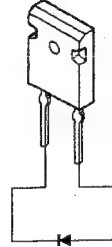
2SC945



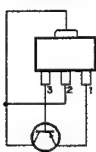
GP1S54



S20L60

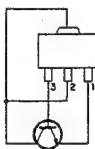
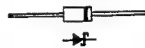


2SB798-DL

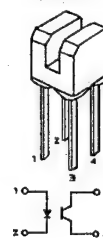
(SCALE 4/1)
TOP VIEW

2SD999-CLCK

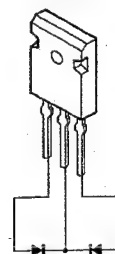
TOP VIEW (SCALE 4/1)

5P6M
D1NS41S2837
1SS184(SCALE 4/1)
TOP VIEW

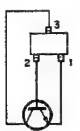
GP2S40K



S20LC20U



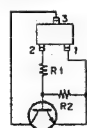
2SC1623-LG

(SCALE 4/1)
TOP VIEW

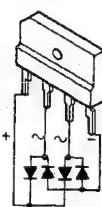
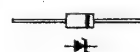
2SK1016

DTC124EK
DTC143TK

TOP VIEW (SCALE 4/1)



D10XB60

HZ20-1
HZ27-2
HZ5CCL
RD13ES-B2
RD36ES-B4
RD5.1ES-B2
RD7.5ES-B3

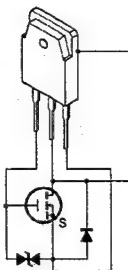
TLN107A



2SC2655



2SK1796

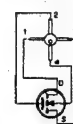


PT501A



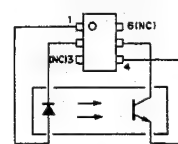
D1LN20

- TOP VIEW -



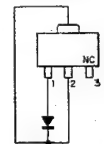
PC111YS

TOP VIEW (SCALE 2/1)

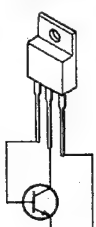


RB110C

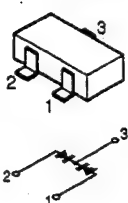
TOP VIEW (SCALE 4/1)



2SC3456M



D2S4M



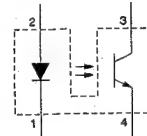
TPS607A



GL514A



PRI-5100



SECTION 5
EXPLODED VIEWS

NOTE:

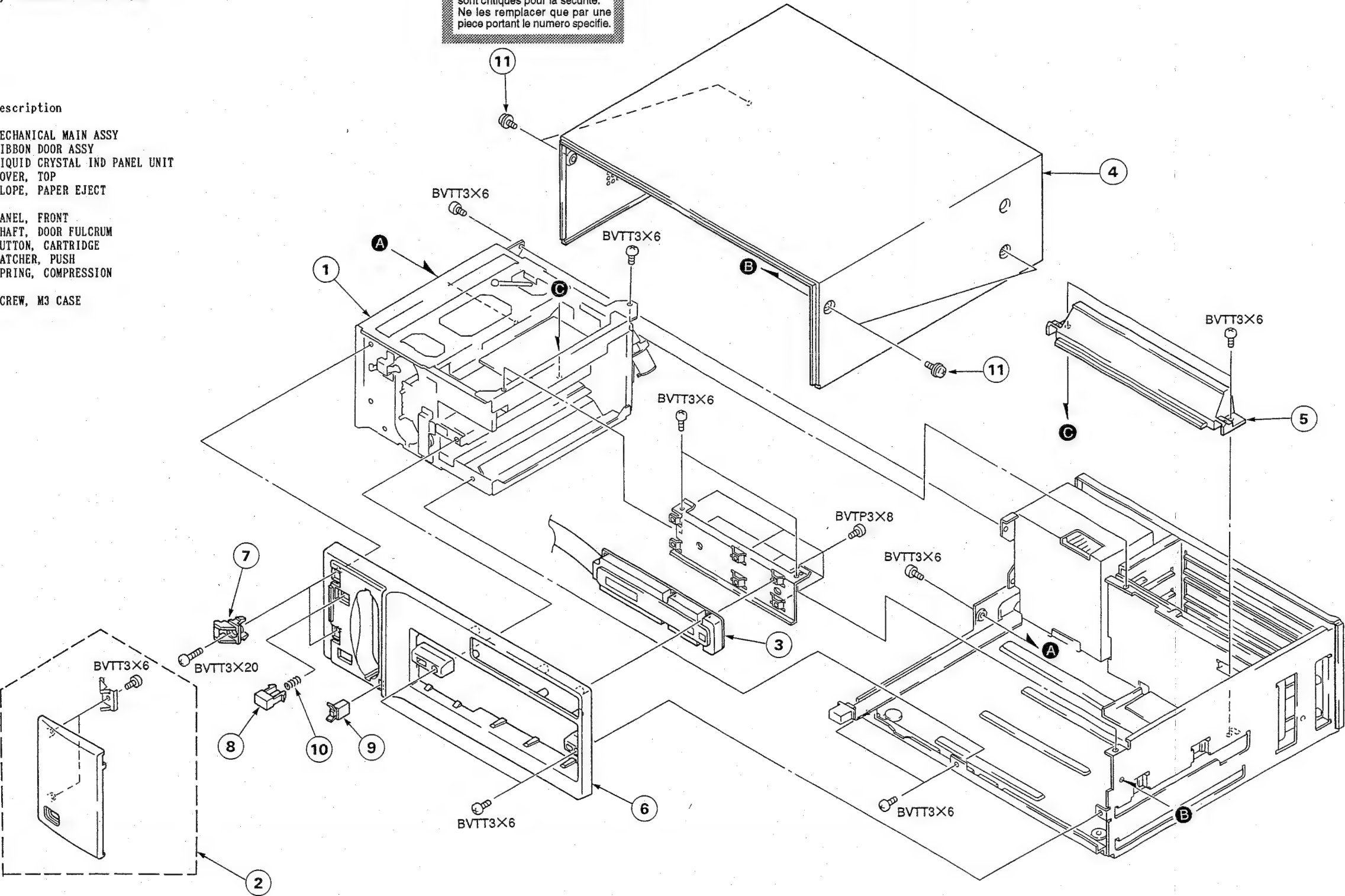
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "O" in the SP column are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

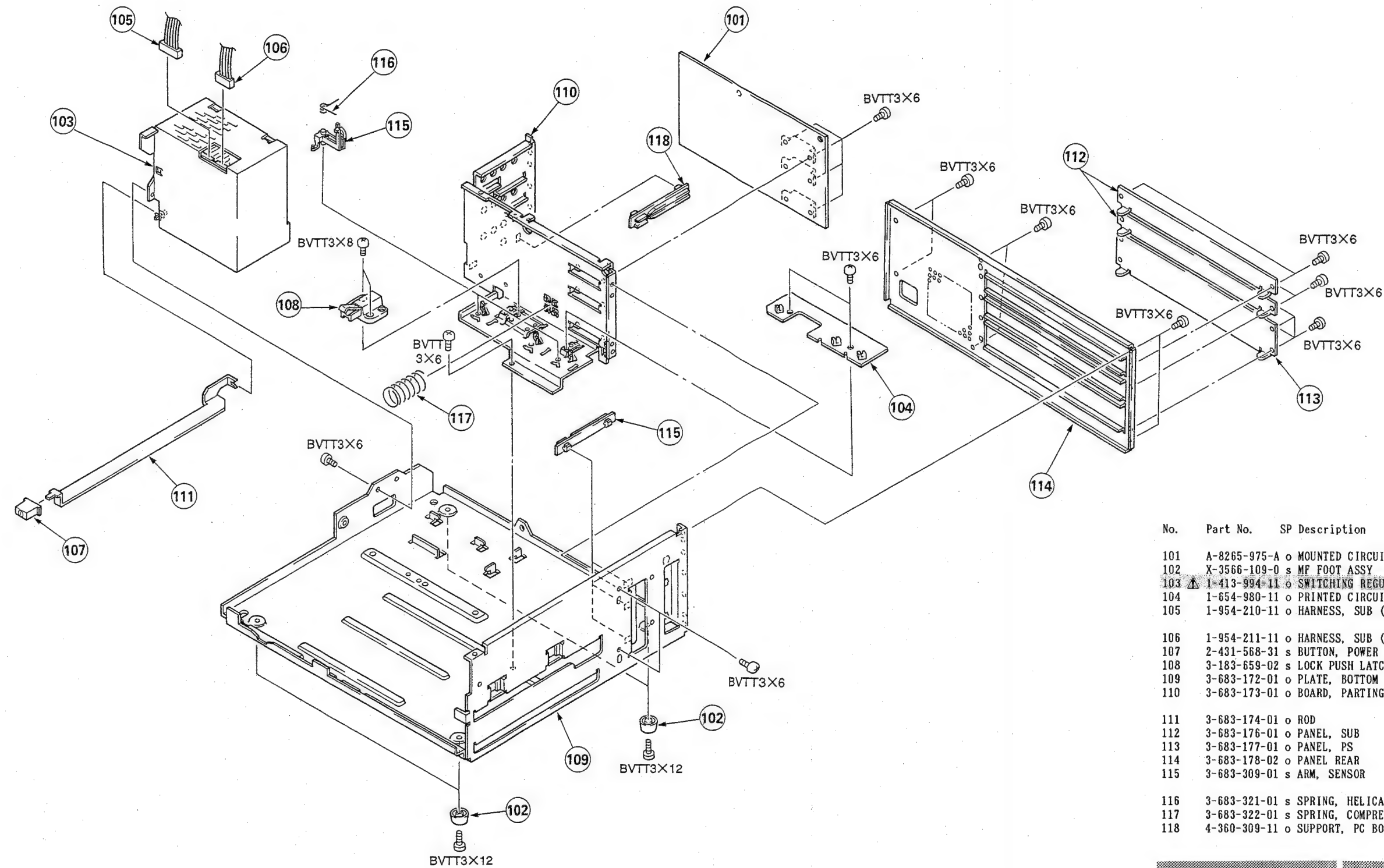
Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-1. FRONT PANEL, CABINET SECTION

No.	Part No.	SP Description
1	A-8265-964-A	o MECHANICAL MAIN ASSY
2	A-8278-100-B	s RIBBON DOOR ASSY
3	1-467-987-12	s LIQUID CRYSTAL IND PANEL UNIT
4	3-683-175-01	o COVER, TOP
5	3-683-194-01	s SLOPE, PAPER EJECT
6	3-683-328-05	s PANEL, FRONT
7	3-725-630-02	s SHAFT, DOOR FULCRUM
8	3-725-631-01	s BUTTON, CARTRIDGE
9	4-392-036-01	s CATCHER, PUSH
10	4-864-519-02	s SPRING, COMPRESSION
11	4-886-821-11	s SCREW, M3 CASE



5-2. REAR PANEL, CHASSIS SECTION

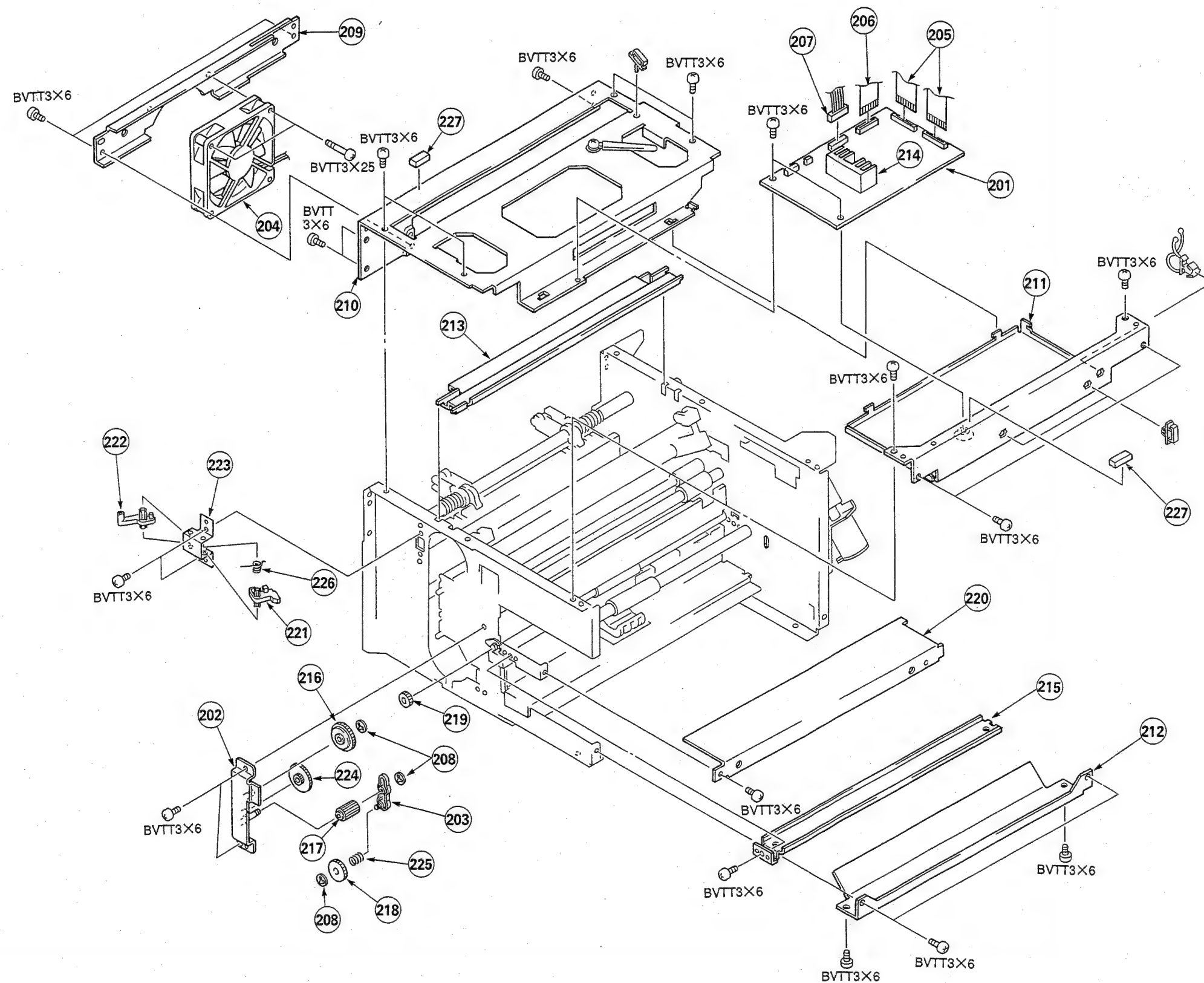


No.	Part No.	SP Description
101	A-8265-975-A	o MOUNTED CIRCUIT BOARD, SY-12
102	X-3566-109-0	s MF FOOT ASSY
103	1-413-994-11	o SWITCHING REGULATOR
104	1-654-980-11	o PRINTED CIRCUIT BOARD, SE-38
105	1-954-210-11	o HARNESS, SUB (HD)
106	1-954-211-11	o HARNESS, SUB (SY)
107	2-431-568-31	s BUTTON, POWER
108	3-183-659-02	s LOCK PUSH LATCH (D-60 BRACK)
109	3-683-172-01	o PLATE, BOTTOM
110	3-683-173-01	o BOARD, PARTING
111	3-683-174-01	o ROD
112	3-683-176-01	o PANEL, SUB
113	3-683-177-01	o PANEL, PS
114	3-683-178-02	o PANEL REAR
115	3-683-309-01	s ARM, SENSOR
116	3-683-321-01	s SPRING, HELICAL TORSION
117	3-683-322-01	s SPRING, COMPRESSION
118	4-360-309-11	o SUPPORT, PC BOARD

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

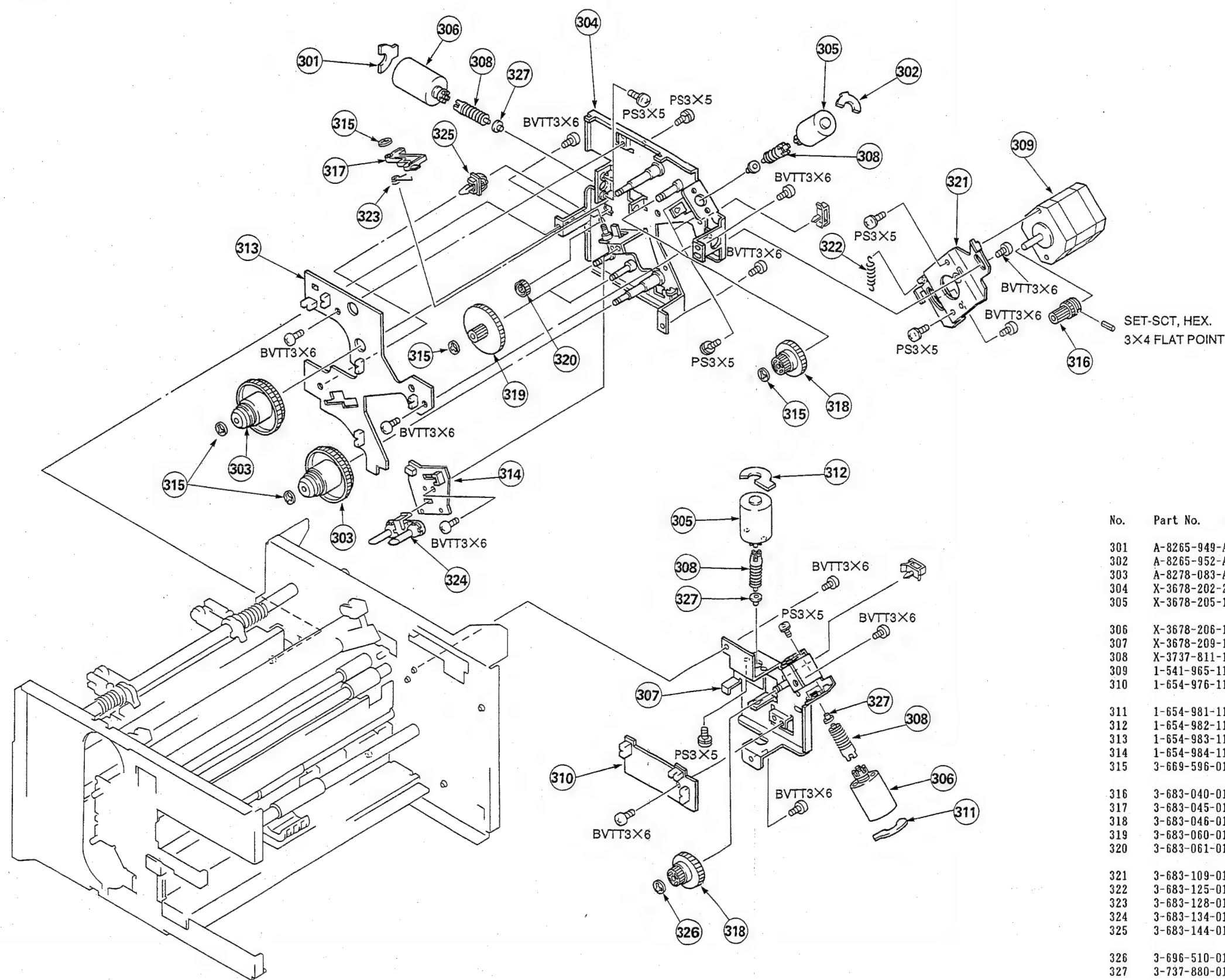
Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-3. MECHANISM SECTION (1)



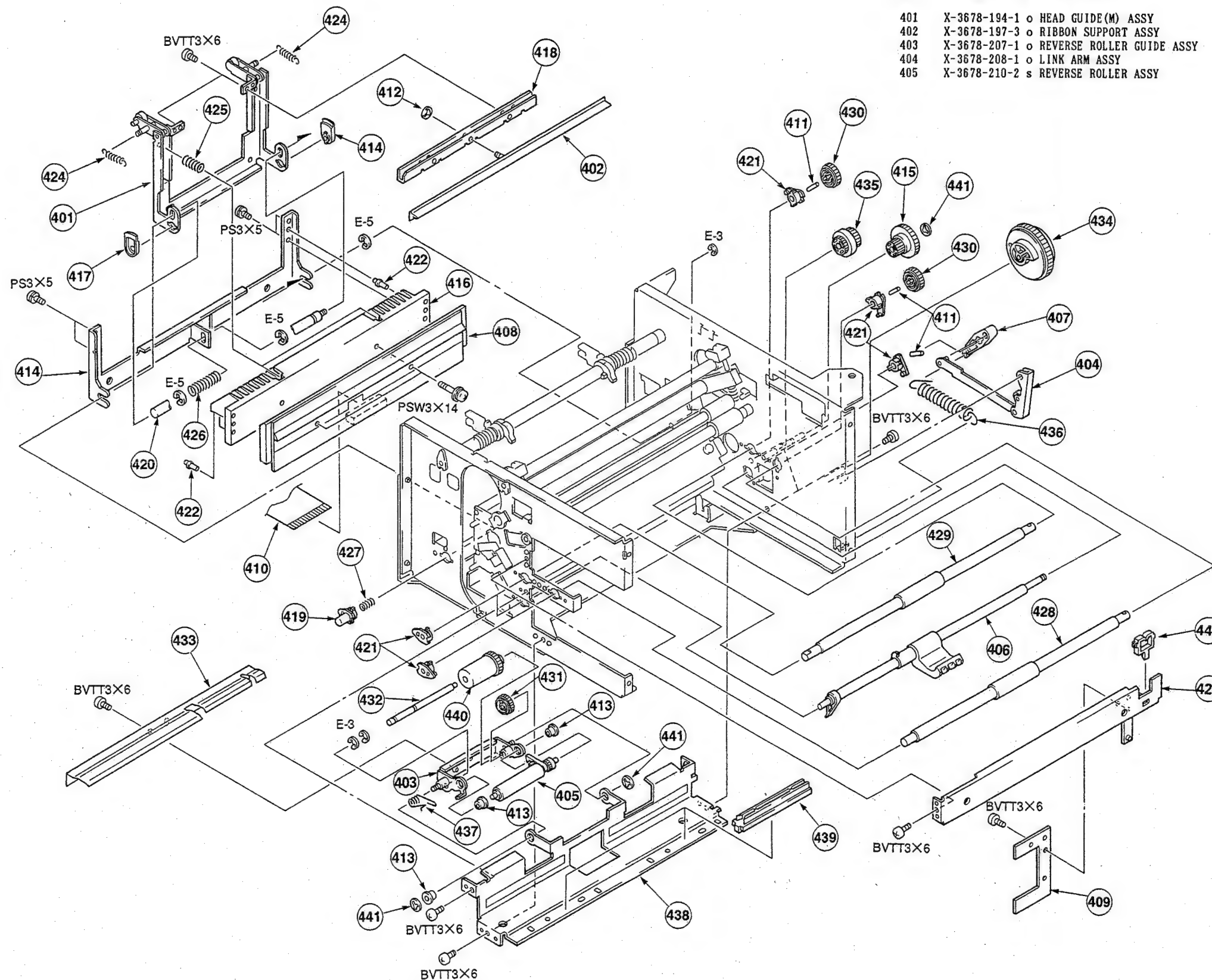
No.	Part No.	SP Description
201	A-8265-967-A	o MOUNTED CIRCUIT BOARD, MEC-2
202	X-3678-214-1	o CODE GEAR BRACKET ASSY
203	X-3678-215-1	s CODE ARM ASSY
204	1-698-549-11	s FAN, DC
205	1-769-534-11	s WIRE, (FLAT TYPE) (24 CORE)
206	1-769-535-11	s WIRE, (FLAT TYPE) (15 CORE)
207	1-954-208-11	o HARNESS, SUB (HDRBN)
208	3-669-596-01	s WASHER(2.3), STOPPER
209	3-683-104-02	o BRACKET, FAN
210	3-683-105-01	o PLATE, TOP
211	3-683-106-01	o CONER(T)
212	3-683-107-03	o CONER(B)
213	3-683-110-01	o GUIDE, RIBBON CASSETTE
214	3-683-146-01	o HEAT SINK (IC)
215	3-683-163-02	o SUPPORT, SUPPLY
216	3-683-183-01	s GEAR(L), CODE IDLER
217	3-683-184-01	s GEAR(S), CODE IDLER
218	3-683-185-01	s GEAR(M), CODE IDLER
219	3-683-186-01	s GEAR, CODE DRIVE
220	3-683-193-01	o GUIDE, PAPER EJECT TRAY
221	3-683-306-01	s ARM, EJECT LOCK
222	3-683-307-01	s ARM, EJECT
223	3-683-308-01	o PLATE, EJECT
224	3-683-318-01	s GEAR, CODE ACCEL
225	3-683-320-01	s SPRING, COMPRESSION
226	3-725-732-01	s SPRING, TORSION
227	4-911-041-01	o CUSHION, RUBBER

5-4. MECHANISM SECTION (2)



No.	Part No.	SP Description
301	A-8265-949-A	o MOUNTED CIRCUIT BOARD, SU-11 (HEAD)
302	A-8265-952-A	o MOUNTED CIRCUIT BOARD, SU-14 (TRUP)
303	A-8278-083-A	s SPROCKET ASSY
304	X-3678-202-2	o MOTOR BRACKET (T) ASSY
305	X-3678-205-1	s DC MOTOR (MT) ASSY
306	X-3678-206-1	s DC MOTOR (MB) ASSY
307	X-3678-209-1	o MOTOR BRACKET (K) ASSY
308	X-3737-811-1	s WORM BLOCK ASSY
309	1-541-965-11	s MOTOR, STEPPING
310	1-654-976-11	o PRINTED CIRCUIT BOARD, SE-27
311	1-654-981-11	o PRINTED CIRCUIT BOARD, SU-12
312	1-654-982-11	o PRINTED CIRCUIT BOARD, SU-13
313	1-654-983-11	o PRINTED CIRCUIT BOARD, SE-28
314	1-654-984-11	o PRINTED CIRCUIT BOARD, SE-37
315	3-669-596-01	s WASHER (2.3), STOPPER
316	3-683-040-01	s PULLEY, PULSE MOTOR
317	3-683-045-01	s ARM, RIBBON CASSETTE EJECT
318	3-683-046-01	s WHEEL, WORM
319	3-683-060-01	s GEAR, RIBBON IDLER
320	3-683-061-01	s GEAR, SUPPLY MOTOR
321	3-683-109-01	o BRACKET, MOTOR (P)
322	3-683-125-01	s SPRING, EXTENSION
323	3-683-128-01	s SPRING, HELICAL TORSION
324	3-683-134-01	s GUIDE, LIGHT
325	3-683-144-01	o PC SUPPORT
326	3-696-510-01	s WASHER (3), STOPPER
327	3-737-880-01	s CAP, WORM SHAFT

5-5. MECHANISM SECTION (3)



No.	Part No.	SP Description
401	X-3678-194-1	o HEAD GUIDE(M) ASSY
402	X-3678-197-3	o RIBBON SUPPORT ASSY
403	X-3678-207-1	o REVERSE ROLLER GUIDE ASSY
404	X-3678-208-1	o LINK ARM ASSY
405	X-3678-210-2	s REVERSE ROLLER ASSY

No.	Part No.	SP Description
406	X-3678-211-2	o SUPPLY LEVER ASSY
407	X-3678-213-2	o SUPPLY DRIVE ARM ASSY
408	1-500-174-11	s HEAD, THERMAL
409	1-654-978-11	o PRINTED CIRCUIT BOARD, SE-34
410	1-769-389-11	s WIRE, (FLAT TYPE) (32 CORE)

411	2-249-361-00	s PIN, PARALLEL
412	3-669-596-01	s WASHER (2.3), STOPPER
413	3-683-036-01	s BEARING(M)
414	3-683-037-02	o GUIDE, HEAD(S)
415	3-683-046-01	s WHEEL, WORM

416	3-683-047-01	o HEAT SINK
417	3-683-048-01	s LEVER, HEAD GUIDE FIXED
418	3-683-052-01	o BASE, RIBBON SUPPORT
419	3-683-065-01	s RETAINER, HEAD GUIDE SHAFT
420	3-683-072-01	o SHAFT, HEAD GUIDE

421	3-683-088-01	s BEARING(L)
422	3-683-091-01	o PIN, HEAD POSITIONING
423	3-683-108-01	o BRACKET, OHP SENSOR
424	3-683-118-01	s SPRING, EXTENSION
425	3-683-120-01	s SPRING, COMPRESSION

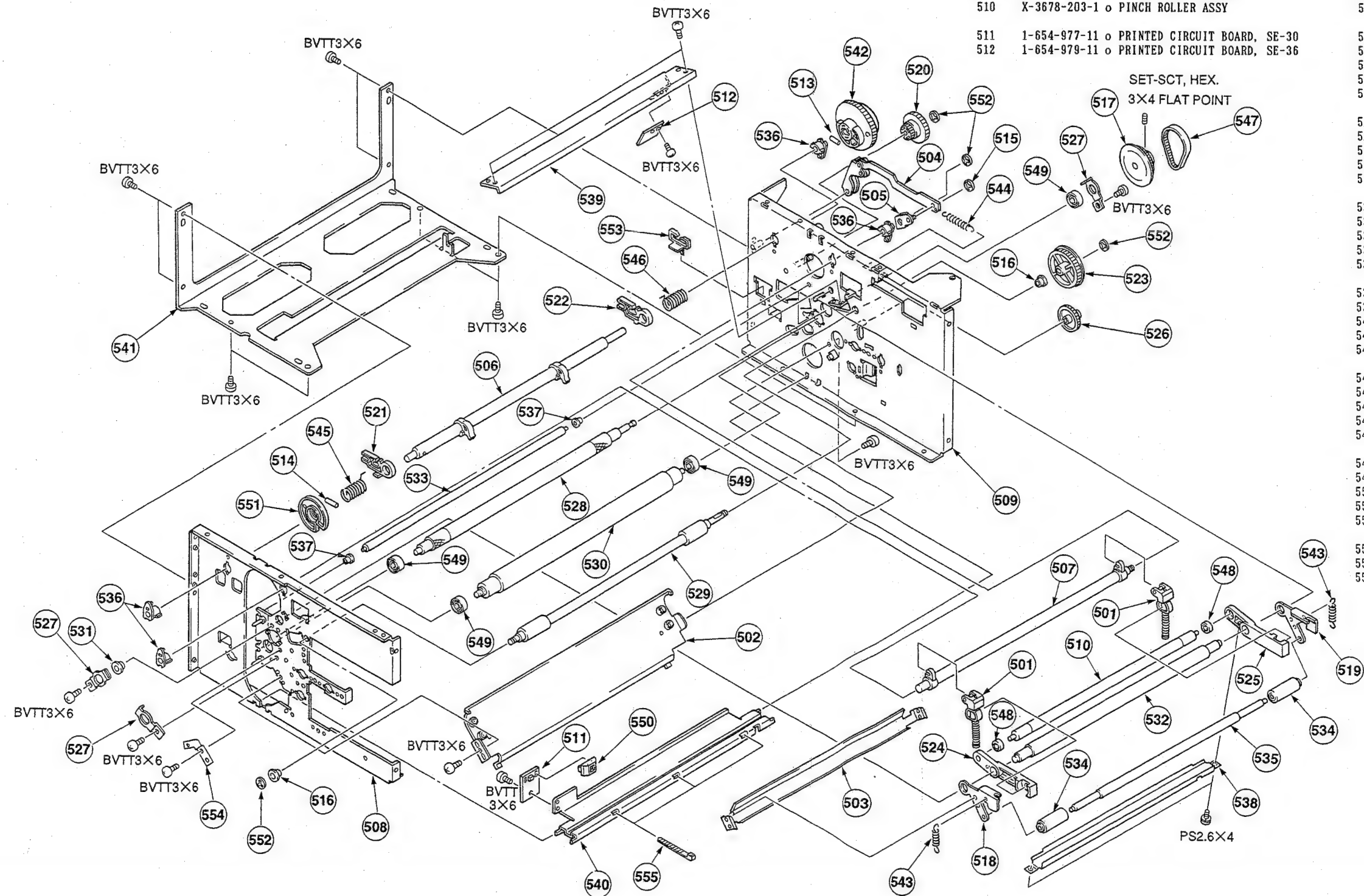
426	3-683-123-01	s SPRING, COMPRESSION
427	3-683-124-01	s SPRING, COMPRESSION
428	3-683-150-01	s ROLLER, PICK UP
429	3-683-151-01	s ROLLER, SUPPLY
430	3-683-153-01	s GEAR, SUPPLY ROLLER DRIVING

431	3-683-158-01	s GEAR, REVERSE IDLER
432	3-683-160-01	o SHAFT, LIMITER
433	3-683-168-01	o GUIDE, REVERSE PAPER
434	3-683-170-01	s CAM, SUPPLY LEVER DRIVING
435	3-683-171-01	s GEAR, SUPPLY ROLLER IDLER

436	3-683-302-01	s SPRING, EXTENSION
437	3-683-303-01	s SPRING, TORSION
438	3-683-311-01	o GUIDE, TRAY
439	3-683-312-01	s GUIDE, RAIL
440	3-683-317-01	s LIMITER

441	3-696-510-01	s WASHER(3), STOPPER
442	4-310-385-00	o HOLDER, WIRE

5-6. MECHANISM SECTION (4)



No.	Part No.	SP Description
501	A-8278-086-A	s CAPSTAN SPRING ASSY
502	X-3678-191-2	s SUPPLY GUIDE ASSY
503	X-3678-192-1	s EJECT GUIDE ASSY
504	X-3678-195-1	o CAPSTAN DRIVING CAM ARM ASSY
505	X-3678-196-1	o CAPSTAN DRIVING SHAFT ARM ASSY
506	X-3678-198-1	s HEAD DRIVING SHAFT ASSY
507	X-3678-199-1	s CAPSTAN DRIVING SHAFT ASSY
508	X-3678-200-2	o SIDE PLATE(F) ASSY
509	X-3678-201-2	o SIDE PLATE(R) ASSY
510	X-3678-203-1	o PINCH ROLLER ASSY
511	1-654-977-11	o PRINTED CIRCUIT BOARD, SE-30
512	1-654-979-11	o PRINTED CIRCUIT BOARD, SE-36
513	2-249-361-00	s PIN, PARALLEL
514	3-661-278-01	s PIN, PARALLEL
515	3-669-596-01	s WASHER(2.3), STOPPER
516	3-683-036-01	s BEARING(M)
517	3-683-039-01	s PULLEY, CAPSTAN
518	3-683-042-01	o ARM, EJECT ROLLER(F)
519	3-683-043-01	o ARM, EJECT ROLLER(R)
520	3-683-046-01	s WHEEL, WORM
521	3-683-050-01	s ARM, HEAD DRIVING(F)
522	3-683-051-01	s ARM, HEAD DRIVING(R)
523	3-683-054-01	s GEAR, EJECT ROLLER
524	3-683-057-01	o ARM, CAPSTAN(F)
525	3-683-058-01	o ARM, CAPSTAN(R)
526	3-683-059-01	s GEAR, EJECT IDLER
527	3-683-066-01	o RETAINER, BEARING
528	3-683-070-01	s CAPSTAN
529	3-683-071-01	s ROLLER, EJECT
530	3-683-073-01	s PLATEN
531	3-683-074-01	s BEARING, CAPSTAN ARM
532	3-683-084-01	o SHAFT, CAPSTAN ARM
533	3-683-085-01	s ROLLER, RIBBON GUIDE
534	3-683-086-01	s PINCH ROLLER, EJECT
535	3-683-087-01	o SHAFT, EJECT PINCH ROLLER
536	3-683-088-01	s BEARING(L)
537	3-683-089-01	s BEARING(S)
538	3-683-101-03	o GUIDE, EJECT(M)
539	3-683-103-02	o GUIDE, EJECT(B)
540	3-683-110-01	o GUIDE, RIBBON CASSETTE
541	3-683-112-01	o PLATE, BASE
542	3-683-113-01	s CAM, CAPSTAN DRIVING
543	3-683-119-01	s SPRING, EXTENSION
544	3-683-122-01	s SPRING, EXTENSION
545	3-683-126-01	s SPRING, HELICAL TORSION
546	3-683-127-01	s SPRING, HELICAL TORSION
547	3-683-138-01	s TIMING BELT
548	3-683-139-01	o FLANGELESS BALL BEARING
549	3-683-140-01	o FLANGELESS BALL BEARING
550	3-683-142-01	s COVER, SENSOR
551	3-683-305-01	s STOPPER, EJECT
552	3-696-510-01	s WASHER(3), STOPPER
553	3-698-787-01	s HOLDER, WIRE
554	3-737-810-01	o SPRING
555	3-847-356-02	o CLAMP

No.	Part No.	SP Description
513	2-249-361-00	s PIN, PARALLEL
514	3-661-278-01	s PIN, PARALLEL
515	3-669-596-01	s WASHER(2.3), STOPPER
516	3-683-036-01	s BEARING(M)
517	3-683-039-01	s PULLEY, CAPSTAN
518	3-683-042-01	o ARM, EJECT ROLLER(F)
519	3-683-043-01	o ARM, EJECT ROLLER(R)
520	3-683-046-01	s WHEEL, WORM
521	3-683-050-01	s ARM, HEAD DRIVING(F)
522	3-683-051-01	s ARM, HEAD DRIVING(R)
523	3-683-054-01	s GEAR, EJECT ROLLER
524	3-683-057-01	o ARM, CAPSTAN(F)
525	3-683-058-01	o ARM, CAPSTAN(R)
526	3-683-059-01	s GEAR, EJECT IDLER
527	3-683-066-01	o RETAINER, BEARING
528	3-683-070-01	s CAPSTAN
529	3-683-071-01	s ROLLER, EJECT
530	3-683-073-01	s PLATEN
531	3-683-074-01	s BEARING, CAPSTAN ARM
532	3-683-084-01	o SHAFT, CAPSTAN ARM
533	3-683-085-01	s ROLLER, RIBBON GUIDE
534	3-683-086-01	s PINCH ROLLER, EJECT
535	3-683-087-01	o SHAFT, EJECT PINCH ROLLER
536	3-683-088-01	s BEARING(L)
537	3-683-089-01	s BEARING(S)
538	3-683-101-03	o GUIDE, EJECT(M)
539	3-683-103-02	o GUIDE, EJECT(B)
540	3-683-110-01	o GUIDE, RIBBON CASSETTE
541	3-683-112-01	o PLATE, BASE
542	3-683-113-01	s CAM, CAPSTAN DRIVING
543	3-683-119-01	s SPRING, EXTENSION
544	3-683-122-01	s SPRING, EXTENSION
545	3-683-126-01	s SPRING, HELICAL TORSION
546	3-683-127-01	s SPRING, HELICAL TORSION
547	3-683-138-01	s TIMING BELT
548	3-683-139-01	o FLANGELESS BALL BEARING
549	3-683-140-01	o FLANGELESS BALL BEARING
550	3-683-142-01	s COVER, SENSOR
551	3-683-305-01	s STOPPER, EJECT
552	3-696-510-01	s WASHER(3), STOPPER
553	3-698-787-01	s HOLDER, WIRE
554	3-737-810-01	o SPRING
555	3-847-356-02	o CLAMP

SECTION 6

ELECTRICAL PARTS LIST

NOTE:

• Items marked "O" in the SP column are not stocked since they are seldom required for routine service.
Some delay should be anticipated when ordering these items.

• All variable and adjustable resistors have characteristic curve B, unless otherwise stated.

When indicating part by reference number, please include the board name.

RESISTORS

- All resistors are in ohms.
- F: non-flammable

CAPACITORS

- MF: μ F, PF: μ μ F

COILS

- MMH: mH, UH: μ H

The components identified by shading and mark Δ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

MEC-2 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-8265-967-A	o MOUNTED CIRCUIT BOARD, MEC-2
1pc	3-683-146-01	o HEAT SINK (IC)
2pcs	7-682-646-09	s SCREW +PS 3X5
<CAPACITOR>		
C1	1-126-396-11	s ELECT, CHIP 47uF 20% 16V
C2	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C3	1-126-391-11	s ELECT, CHIP 47uF 20% 6.3V
C4	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C5	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C6	1-126-391-11	s ELECT, CHIP 47uF 20% 6.3V
C7	1-126-391-11	s ELECT, CHIP 47uF 20% 6.3V
C8	1-126-396-11	s ELECT, CHIP 47uF 20% 16V
C101	1-163-275-11	s CERAMIC 0.001uF 5% 50V
C102	1-163-275-11	s CERAMIC 0.001uF 5% 50V
C103	1-164-161-11	s CERAMIC, CHIP 0.0022uF 10% 50V
C104	1-164-161-11	s CERAMIC, CHIP 0.0022uF 10% 50V
C105	1-128-403-11	s ELECT 47uF 20% 35V
C106	1-128-403-11	s ELECT 47uF 20% 35V
C107	1-126-396-11	s ELECT, CHIP 47uF 20% 16V
C201	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C202	1-163-275-11	s CERAMIC 0.001uF 5% 50V
C203	1-163-275-11	s CERAMIC 0.001uF 5% 50V
C204	1-163-275-11	s CERAMIC 0.001uF 5% 50V
C205	1-163-275-11	s CERAMIC 0.001uF 5% 50V
C206	1-163-275-11	s CERAMIC 0.001uF 5% 50V
C207	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C208	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C209	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C210	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C211	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C212	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C213	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C214	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C215	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C216	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C217	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C218	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C219	1-164-161-11	s CERAMIC, CHIP 0.0022uF 10% 50V
C220	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C221	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C222	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C223	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C224	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V

(MEC-2 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C225	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C226	1-163-275-11	s CERAMIC 0.001uF 5% 50V
<CONNECTOR>		
CN401	1-764-782-11	o HOUSING, CONNECTOR 24P
CN402	1-764-782-11	o HOUSING, CONNECTOR 24P
CN403	1-560-894-00	o PIN, CONNECTOR 6P
CN404	1-564-007-11	o CONNECTOR 8P, MALE
CN405	1-506-476-11	o CONNECTOR, 11P, MALE
CN406	1-750-840-21	s HOUSING, CONNECTOR 15P
CN407	1-564-004-11	o PIN, CONNECTOR 5P
CN408	1-564-002-11	s PIN, CONNECTOR 3P
CN409	1-506-468-11	o CONNECTOR, 3P, MALE
CN410	1-506-474-11	o CONNECTOR, 9P, MALE
<DIODE>		
D101	8-719-200-02	s DIODE 10E2
D102	8-719-200-02	s DIODE 10E2
D103	8-719-200-02	s DIODE 10E2
D104	8-719-200-02	s DIODE 10E2
D105	8-719-200-02	s DIODE 10E2
D106	8-719-200-02	s DIODE 10E2
<IC>		
IC101	8-759-323-72	s IC SLA7024M-871
IC102	8-759-600-24	s IC M54543L
IC103	8-759-633-10	s IC M54544AL
IC104	8-759-633-10	s IC M54544AL
IC105	8-759-600-24	s IC M54543L
IC106	8-759-633-10	s IC M54544AL
IC201	8-759-280-75	s IC ST24C01CB1
IC202	8-759-983-69	s IC LM358PS
IC203	8-759-983-69	s IC LM358PS
<COIL>		
L1	1-424-653-11	s COIL, CHOKE 10UH
<TRANSISTOR>		
Q101	8-729-140-75	s TRANSISTOR 2SD999-CLCK
Q201	8-729-101-07	s TRANSISTOR 2SB798
Q202	8-729-901-00	s TRANSISTOR DTC124EK
Q203	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q204	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q205	8-729-120-28	s TRANSISTOR 2SC1623-L5L6

(MEC-2 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
<RESISTOR>		
R101	1-216-089-00 s	METAL, CHIP 47K 5% 1/10W
R102	1-216-089-00 s	METAL, CHIP 47K 5% 1/10W
R103	1-216-389-11 s	METAL 1 5% 3W
R104	1-216-057-00 s	METAL, CHIP 2.2K 5% 1/10W
R105	1-216-057-00 s	METAL, CHIP 2.2K 5% 1/10W
R106	1-216-389-11 s	METAL 1 5% 3W
R107	1-216-037-00 s	METAL, CHIP 330 5% 1/10W
R108	1-216-023-00 s	METAL, CHIP 82 5% 1/10W
R109	1-216-065-00 s	METAL, CHIP 4.7K 5% 1/10W
R110	1-216-065-00 s	METAL, CHIP 4.7K 5% 1/10W
R111	1-216-065-00 s	METAL, CHIP 4.7K 5% 1/10W
R112	1-216-065-00 s	METAL, CHIP 4.7K 5% 1/10W
R113	1-216-049-91 s	METAL 1K 5% 1/10W
R114	1-216-049-91 s	METAL 1K 5% 1/10W
R115	1-216-049-91 s	METAL 1K 5% 1/10W
R116	1-216-049-91 s	METAL 1K 5% 1/10W
R117	1-216-049-91 s	METAL 1K 5% 1/10W
R118	1-216-049-91 s	METAL 1K 5% 1/10W
R119	1-216-049-91 s	METAL 1K 5% 1/10W
R120	1-216-049-91 s	METAL 1K 5% 1/10W
R121	1-216-049-91 s	METAL 1K 5% 1/10W
R122	1-216-049-91 s	METAL 1K 5% 1/10W
R123	1-216-049-91 s	METAL 1K 5% 1/10W
R124	1-218-236-91 s	METAL 1 10% 1/4W
R125	1-218-236-91 s	METAL 1 10% 1/4W
R126	1-218-236-91 s	METAL 1 10% 1/4W
R127	1-218-236-91 s	METAL 1 10% 1/4W
R201	1-216-065-00 s	METAL, CHIP 4.7K 5% 1/10W
R202	1-216-065-00 s	METAL, CHIP 4.7K 5% 1/10W
R203	1-216-073-00 s	METAL, CHIP 10K 5% 1/10W
R204	1-216-049-91 s	METAL 1K 5% 1/10W
R205	1-216-037-00 s	METAL, CHIP 330 5% 1/10W
R206	1-216-689-11 s	METAL, CHIP 39K 5% 1/10W
R207	1-216-049-91 s	METAL 1K 5% 1/10W
R208	1-216-037-00 s	METAL, CHIP 330 5% 1/10W
R209	1-216-689-11 s	METAL, CHIP 39K 5% 1/10W
R210	1-216-049-91 s	METAL 1K 5% 1/10W
R211	1-216-037-00 s	METAL, CHIP 330 5% 1/10W
R212	1-216-689-11 s	METAL, CHIP 39K 5% 1/10W
R213	1-216-049-91 s	METAL 1K 5% 1/10W
R214	1-216-013-00 s	METAL, CHIP 33 5% 1/10W
R215	1-216-083-00 s	METAL, CHIP 27K 5% 1/10W
R216	1-216-049-91 s	METAL 1K 5% 1/10W
R217	1-216-037-00 s	METAL, CHIP 330 5% 1/10W
R218	1-216-073-00 s	METAL, CHIP 10K 5% 1/10W
R219	1-216-049-91 s	METAL 1K 5% 1/10W
R220	1-216-037-00 s	METAL, CHIP 330 5% 1/10W
R221	1-216-689-11 s	METAL, CHIP 39K 5% 1/10W
R222	1-216-049-91 s	METAL 1K 5% 1/10W
R223	1-216-037-00 s	METAL, CHIP 330 5% 1/10W
R224	1-216-689-11 s	METAL, CHIP 39K 5% 1/10W
R225	1-216-049-91 s	METAL 1K 5% 1/10W
R226	1-216-037-00 s	METAL, CHIP 330 5% 1/10W
R227	1-216-089-00 s	METAL, CHIP 47K 5% 1/10W
R228	1-216-049-91 s	METAL 1K 5% 1/10W
R229	1-216-037-00 s	METAL, CHIP 330 5% 1/10W
R230	1-216-073-00 s	METAL, CHIP 10K 5% 1/10W
R231	1-216-049-91 s	METAL 1K 5% 1/10W

(MEC-2 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R232	1-216-037-00 s	METAL, CHIP 330 5% 1/10W
R233	1-216-089-00 s	METAL, CHIP 47K 5% 1/10W
R234	1-216-049-91 s	METAL 1K 5% 1/10W
R235	1-216-025-91 s	METAL 100 5% 1/10W
R236	1-216-075-00 s	METAL, CHIP 12K 5% 1/10W
R237	1-216-049-91 s	METAL 1K 5% 1/10W
R238	1-216-073-00 s	METAL, CHIP 10K 5% 1/10W
R239	1-216-049-91 s	METAL 1K 5% 1/10W
R240	1-216-689-11 s	METAL, CHIP 39K 5% 1/10W
R241	1-216-049-91 s	METAL 1K 5% 1/10W
R242	1-216-037-00 s	METAL, CHIP 330 5% 1/10W
R243	1-216-689-11 s	METAL, CHIP 39K 5% 1/10W
R244	1-216-049-91 s	METAL 1K 5% 1/10W
R245	1-216-037-00 s	METAL, CHIP 330 5% 1/10W
R246	1-216-689-11 s	METAL, CHIP 39K 5% 1/10W
R247	1-216-049-91 s	METAL 1K 5% 1/10W
R248	1-216-037-00 s	METAL, CHIP 330 5% 1/10W
R249	1-216-037-00 s	METAL, CHIP 330 5% 1/10W
R250	1-216-689-11 s	METAL, CHIP 39K 5% 1/10W
R251	1-216-049-91 s	METAL 1K 5% 1/10W
R252	1-216-037-00 s	METAL, CHIP 330 5% 1/10W
R253	1-216-689-11 s	METAL, CHIP 39K 5% 1/10W
R254	1-216-049-91 s	METAL 1K 5% 1/10W
R255	1-216-037-00 s	METAL, CHIP 330 5% 1/10W
R256	1-216-689-11 s	METAL, CHIP 39K 5% 1/10W
R257	1-216-049-91 s	METAL 1K 5% 1/10W

SE-27 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-654-976-11 o	PC BOARD, SE-27
<PHOTO INTERRUPTER>		
PH101	8-719-939-05 s	PHOTO INTERRUPTER GP1S54
PH102	8-719-939-05 s	PHOTO INTERRUPTER GP1S54
PH114	8-719-939-05 s	PHOTO INTERRUPTER GP1S54

<HARNESS>

W701	1-954-209-11 o	HARNESS, SUB (ARMLD)
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SE-28 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-654-983-11 o	PRINTED CIRCUIT BOARD, SE-28
<CAPACITOR>		
CN705	1-506-481-11 o	CONNECTOR, 2P
CN706	1-564-718-11 o	CONNECTOR, 2P
CN707	1-766-901-11 s	CONNECTOR, FFC/FPC (2IF) 15P
CN708	1-569-339-11 s	CONNECTOR, BOARD TO BOARD 7P

(SE-28 BOARD)

Ref. No.
or Q'ty Part No. SP Description

<PHOTO INTERRUPTER>

PH103 8-719-939-05 s PHOTO INTERRUPTER GP1S54
PH104 8-719-939-05 s PHOTO INTERRUPTER GP1S54
PH105 8-719-939-05 s PHOTO INTERRUPTER GP1S54
PH106 8-719-939-05 s PHOTO INTERRUPTER GP1S54
PH109 8-719-939-05 s PHOTO INTERRUPTER GP1S54

SE-30 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc 1-654-977-11 o PRINTED CIRCUIT BOARD, SE-30

<PHOTO INTERRUPTER>

PH107 8-749-923-97 s PHOTO INTERRUPTER GP2S40K

<HARNESS>

W704 1-954-206-12 o HARNESS, SUB (BCODE)

SE-34 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc 1-654-978-11 o PRINTED CIRCUIT BOARD, SE-34
1pc 3-683-044-01 s PLATE, SUPPLY SENSOR
1pc 3-683-129-02 s SPRING, HELICAL TORSION
2pcs 3-737-916-02 s COVER, SENSOR

<DIODE & PHOTO INTERRUPTER>

D101 8-719-049-46 s DIODE TLN107A-B

PH108 8-749-010-50 s PHOTO INTERRUPTER RPI-5100

<TRANSISTOR>

Q101 8-729-027-69 s TRANSISTOR TPS607A-B

<HARNESS>

W702 1-954-204-11 o HARNESS, SUB (PTO OHP)

SE-36 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc 1-654-979-11 o PRINTED CIRCUIT BOARD, SE-36
1pc 3-683-049-01 s PLATE, EDGE SENSOR
1pc 3-683-129-02 s SPRING, HELICAL TORSION

<PHOTO INTERRUPTER>

PH110 8-749-010-50 s PHOTO INTERRUPTER RPI-5100

<HARNESS>

W703 1-954-205-11 o HARNESS, SUB (PEDGE)

SE-37 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc 1-654-984-11 o PRINTED CIRCUIT BOARD, SE-37

<CONNECTOR>

CN709 1-569-336-11 s CONNECTOR, BOARD TO BOARD 7P

<DIODE>

D102 8-719-049-47 s DIODE GL514A

<PHOTO INTERRUPTER>

PH114 1-810-472-11 s PHOTO SENSOR

<TRANSISTOR>

Q102 8-719-988-59 s PHOTO TRANSISTOR PT501A

SE-38 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc 1-654-980-11 o PRINTED CIRCUIT BOARD, SE-38

<PHOTO INTERRUPTER>

PH111 8-719-939-05 s PHOTO INTERRUPTER GP1S54

PH113 8-719-939-05 s PHOTO INTERRUPTER GP1S54

<THERMISTOR>

TH101 1-800-202-99 s THERMISTOR S-10K

<HARNESS>

W705 1-954-207-11 o HARNESS, SUB (PSIZE)

SU-11 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc A-8265-949-A o MOUNTED CIRCUIT BOARD, SU-11 (HEAD)

SU-12 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc 1-654-981-11 o PRINTED CIRCUIT BOARD, SU-12

<CONNECTOR>

CN702 1-564-001-11 o CONNECTOR, 2P, MALE

SU-13 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-654-982-11	o PRINTED CIRCUIT BOARD, SU-13 <CONNECTOR>
CN703	1-506-467-11	o CONNECTOR, 2P

SU-14 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-8265-952-A	o MOUNTED CIRCUIT BOARD, SU-14 (TKUP) <CONNECTOR>
CN704	1-506-467-11	o CONNECTOR, 2P

SY-12 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-8265-975-A	o MOUNTED CIRCUIT BOARD, SY-12 <CAPACITOR>
C1	1-164-232-11	s CERAMIC, CHIP 0.01uF 10% 50V
C2	1-126-391-11	s ELECT, CHIP 47uF 20% 6.3V
C3	1-126-391-11	s ELECT, CHIP 47uF 20% 6.3V
C4	1-164-232-11	s CERAMIC, CHIP 0.01uF 10% 50V
C5	1-126-396-11	s ELECT, CHIP 47uF 20% 16V
C6	1-164-232-11	s CERAMIC, CHIP 0.01uF 10% 50V
C7	1-128-403-11	s ELECT 47uF 20% 35V
C8	1-164-232-11	s CERAMIC, CHIP 0.01uF 10% 50V
C9	1-126-391-11	s ELECT, CHIP 47uF 20% 6.3V
C12	1-126-391-11	s ELECT, CHIP 47uF 20% 6.3V
C101	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C102	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C105	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C106	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C107	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C108	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C110	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C122	1-163-251-11	s CERAMIC, CHIP 100PF 5% 50V
C123	1-163-251-11	s CERAMIC, CHIP 100PF 5% 50V
C124	1-163-251-11	s CERAMIC, CHIP 100PF 5% 50V
C125	1-163-251-11	s CERAMIC, CHIP 100PF 5% 50V
C126	1-163-263-11	s CERAMIC, CHIP 330PF 5% 50V
C127	1-163-263-11	s CERAMIC, CHIP 330PF 5% 50V
C128	1-163-263-11	s CERAMIC, CHIP 330PF 5% 50V
C129	1-163-263-11	s CERAMIC, CHIP 330PF 5% 50V
C130	1-163-263-11	s CERAMIC, CHIP 330PF 5% 50V
C131	1-126-391-11	s ELECT, CHIP 47uF 20% 6.3V
C132	1-164-232-11	s CERAMIC, CHIP 0.01uF 10% 50V
C133	1-163-263-11	s CERAMIC, CHIP 330PF 5% 50V
C134	1-163-263-11	s CERAMIC, CHIP 330PF 5% 50V
C202	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C203	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C204	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V

(SY-12 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C207	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C209	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C210	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C212	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C213	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C214	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C216	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C224	1-128-235-11	s ELECT 0.47uF 20% 50V
C302	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C305	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C306	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C307	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C309	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C310	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
C311	1-163-038-91	s CERAMIC, CHIP 0.1uF 25V
		<CONNECTOR>
CN1	1-770-308-11	o HOUSING, CONNECTOR
CN2	1-770-308-11	o HOUSING, CONNECTOR
CN3	1-770-308-11	o HOUSING, CONNECTOR
CN4	1-764-829-11	o CONNECTOR, FPC 24P
CN5	1-764-829-11	o CONNECTOR, FPC 24P
CN6	1-568-165-11	s CONNECTOR, FPC 22P
CN7	1-695-393-31	o PIN, CONNECTOR 32P
CN10	1-564-035-11	o PIN, CONNECTOR 10P
CNI102	1-526-660-21	o SOCKET, IC (DP) 32P
CNI209	1-526-659-00	o SOCKET, IC (DP) 28P
		<DIODE>
D101	8-719-801-78	s DIODE 1SS184
D201	8-719-801-78	s DIODE 1SS184
		<FILTER>
FL201	1-236-740-21	s FILTER, EMI
FL202	1-236-740-21	s FILTER, EMI
FL203	1-236-740-21	s FILTER, EMI
FL204	1-236-740-21	s FILTER, EMI
FL205	1-236-740-21	s FILTER, EMI
FL206	1-236-740-21	s FILTER, EMI
FL207	1-236-740-21	s FILTER, EMI
FL208	1-236-740-21	s FILTER, EMI
FL209	1-236-740-21	s FILTER, EMI
FL210	1-236-740-21	s FILTER, EMI
FL211	1-236-740-21	s FILTER, EMI
FL212	1-236-740-21	s FILTER, EMI
FL213	1-236-740-21	s FILTER, EMI
FL214	1-236-740-21	s FILTER, EMI
FL215	1-236-740-21	s FILTER, EMI
FL216	1-236-740-21	s FILTER, EMI
FL217	1-236-740-21	s FILTER, EMI
FL218	1-236-740-21	s FILTER, EMI
FL219	1-236-740-21	s FILTER, EMI
FL220	1-236-740-21	s FILTER, EMI
FL221	1-236-740-21	s FILTER, EMI
		<IC>
IC101	8-759-254-94	s IC HD6413378F10
IC102	8-759-327-08	o IC M27C1001-SY12PV1.00
IC103	8-759-926-11	s IC SN74HC138ANS

(SY-12 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
IC104	8-759-926-11	s IC SN74HC138ANS
IC105	8-759-148-14	s IC UPD71055GB-3B4
IC106	8-759-148-14	s IC UPD71055GB-3B4
IC107	8-759-926-49	s IC SN74HC245ANS
IC108	8-759-926-49	s IC SN74HC245ANS
IC109	8-759-926-48	s IC SN74HC244ANS
IC110	8-759-044-65	s IC M62352FP
IC111	8-759-518-38	s IC PST572CMT-T1
IC201	8-759-926-18	s IC SN74HC157ANS
IC202	8-759-926-18	s IC SN74HC157ANS
IC203	8-759-053-58	s IC IDT6116SA25S0
IC204	8-759-267-11	s IC CXD8862Q
IC206	8-759-926-21	s IC SN74HC161ANS
IC207	8-759-926-21	s IC SN74HC161ANS
IC208	8-759-926-21	s IC SN74HC161ANS
IC210	8-759-327-09	o IC M27C512-SY12DV1.00
IC211	8-759-926-48	s IC SN74HC244ANS
IC212	8-759-183-30	s IC CXD8862Q
IC213	8-759-183-30	s IC CXD8862Q
IC214	8-759-183-30	s IC CXD8862Q
IC216	8-759-189-55	s IC CXD8865R
IC301	8-759-925-74	s IC SN74HC04ANS
IC302	8-759-925-74	s IC SN74HC04ANS
IC303	8-759-925-76	s IC SN74HC08ANS
IC304	8-759-925-85	s IC SN74HC32ANS
IC305	8-759-925-72	s IC SN74HC02ANS
IC306	8-759-926-05	s IC SN74HC125ANS
IC307	8-759-925-90	s IC SN74HC74ANS
IC308	8-759-925-90	s IC SN74HC74ANS
IC309	8-759-925-80	s IC SN74HC14ANS
IC310	8-759-927-46	s IC SN74HC00ANS
IC311	8-759-927-29	s IC SN74HC04ANS
<COIL>		
L1	1-424-653-11	s COIL, CHOKO 10UH
<TRANSISTOR>		
Q101	8-729-900-98	s TRANSISTOR DTC143TK
<RESISTOR>		
R101	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R102	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R103	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R104	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R105	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R106	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R107	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R108	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R109	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R110	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R111	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R112	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R113	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R114	1-216-041-00	s METAL, CHIP 470 5% 1/10W
R115	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R116	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R117	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R118	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R119	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W

(SY-12 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R120	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R121	1-216-001-00	s METAL, CHIP 10 5% 1/10W
R122	1-216-001-00	s METAL, CHIP 10 5% 1/10W
R123	1-216-001-00	s METAL, CHIP 10 5% 1/10W
R124	1-216-025-91	s METAL 100 5% 1/10W
R125	1-216-025-91	s METAL 100 5% 1/10W
R126	1-216-025-91	s METAL 100 5% 1/10W
R127	1-216-025-91	s METAL 100 5% 1/10W
R128	1-216-025-91	s METAL 100 5% 1/10W
R129	1-216-025-91	s METAL 100 5% 1/10W
R130	1-216-025-91	s METAL 100 5% 1/10W
R131	1-216-025-91	s METAL 100 5% 1/10W
R132	1-216-025-91	s METAL 100 5% 1/10W
R133	1-216-025-91	s METAL 100 5% 1/10W
R134	1-216-025-91	s METAL 100 5% 1/10W
R135	1-216-025-91	s METAL 100 5% 1/10W
R136	1-216-025-91	s METAL 100 5% 1/10W
R137	1-216-025-91	s METAL 100 5% 1/10W
R138	1-216-025-91	s METAL 100 5% 1/10W
R139	1-216-025-91	s METAL 100 5% 1/10W
R140	1-216-025-91	s METAL 100 5% 1/10W
R141	1-216-025-91	s METAL 100 5% 1/10W
R142	1-216-025-91	s METAL 100 5% 1/10W
R143	1-216-025-91	s METAL 100 5% 1/10W
R144	1-216-025-91	s METAL 100 5% 1/10W
R145	1-216-025-91	s METAL 100 5% 1/10W
R146	1-216-025-91	s METAL 100 5% 1/10W
R147	1-216-025-91	s METAL 100 5% 1/10W
R148	1-216-025-91	s METAL 100 5% 1/10W
R149	1-216-025-91	s METAL 100 5% 1/10W
R150	1-216-025-91	s METAL 100 5% 1/10W
R151	1-216-025-91	s METAL 100 5% 1/10W
R152	1-216-025-91	s METAL 100 5% 1/10W
R153	1-216-025-91	s METAL 100 5% 1/10W
R154	1-216-025-91	s METAL 100 5% 1/10W
R155	1-216-025-91	s METAL 100 5% 1/10W
R156	1-216-025-91	s METAL 100 5% 1/10W
R157	1-216-025-91	s METAL 100 5% 1/10W
R158	1-216-025-91	s METAL 100 5% 1/10W
R159	1-216-025-91	s METAL 100 5% 1/10W
R160	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R161	1-216-025-91	s METAL 100 5% 1/10W
R201	1-216-121-00	s METAL, CHIP 1M 5% 1/10W
R202	1-216-121-00	s METAL, CHIP 1M 5% 1/10W
R203	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R205	1-216-295-91	s METAL CHIP 0 5% 1/10W
R206	1-216-025-91	s METAL 100 5% 1/10W
R207	1-216-025-91	s METAL 100 5% 1/10W
R208	1-216-025-91	s METAL 100 5% 1/10W
R209	1-216-097-00	s METAL, CHIP 100K 5% 1/10W
R210	1-216-009-00	s METAL, CHIP 22 5% 1/10W
R211	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R222	1-216-025-91	s METAL 100 5% 1/10W
R223	1-216-025-91	s METAL 100 5% 1/10W
R224	1-216-025-91	s METAL 100 5% 1/10W
R225	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R226	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R227	1-216-025-91	s METAL 100 5% 1/10W
R228	1-216-295-91	s METAL CHIP 0 5% 1/10W
R229	1-216-025-91	s METAL 100 5% 1/10W

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

(SY-12 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R230	1-216-025-91 s	METAL 100 5% 1/10W

<SWITCH>

S101	1-570-909-11 s	SWITCH, PUSH
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<THERMISTOR>

TH101	1-810-075-11 s	THERMISTOR, NTC
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<CRYSTAL>

X101	1-760-150-21 s	RESONATOR, CERAMIC 20MHz
X201	1-579-906-21 s	RESONATOR, CERAMIC 24MHz
X202	1-760-607-11 s	RESONATOR, CERAMIC 14MHz

SWITCHING REGULATOR

Ref. No. or Q'ty	Part No.	SP Description
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1pc	Δ 1-413-994-11 o	SWITCHING REGULATOR
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MISCELLANEOUS

CN7	Δ 9-909-685-01 s	CONNECTOR ASSY 2P
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FAN1	9-909-686-01 s	MOTOR, DC FAN
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IN1	Δ 1-580-375-31 s	INLET, 3P
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SW1	Δ 9-909-684-01 s	SWITCH
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PR-930038 BOARD

1pc	Δ 9-909-749-01 o	PRINTED CIRCUIT BOARD, PR-930038
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<CAPACITOR>

C27	Δ 9-909-727-01 s	CERAMIC 1000p 250V
C28	9-909-728-01 s	ELECT 330uF 400V
C29	9-909-730-01 s	CERAMIC 2200p 1KV
C30	9-909-731-01 s	CERAMIC 100p 2KV
C31	9-909-732-01 s	CERAMIC 330p 2KV

C32	1-136-165-00 s	FILM 0.1uF 10% 50V
C47	1-128-571-11 s	ELECT 56uF 20% 50V
C51-1	9-909-738-01 s	CERAMIC 1500p 1KV
C51-2	9-909-738-01 s	CERAMIC 1500p 1KV
C53-1	1-104-687-11 s	ELECT 2700uF 20% 35V

C53-2	1-104-687-11 s	ELECT 2700uF 20% 35V
C54	1-104-687-11 s	ELECT 2700uF 20% 35V
C55	1-136-165-00 s	FILM 0.1uF 10% 50V
C58	1-136-165-00 s	FILM 0.1uF 10% 50V
C65	1-128-585-11 s	ELECT 270uF 20% 16V

C69	1-128-585-11 s	ELECT 270uF 20% 16V
C111	9-909-745-01 s	FILM 0.68uF 630V
C112	Δ 9-909-746-01 s	FILM 0.22uF 250V
C113	1-128-376-11 s	ELECT 220uF 20% 25V
C114	1-136-165-00 s	FILM 0.1uF 10% 50V

<CIRCUIT MODULE>

CM111	Δ 9-909-708-01 s	CIRCUIT MODULE
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(SWITCHING REGULATOR)

Ref. No. or Q'ty	Part No.	SP Description
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<CONNECTOR>

CN3	1-564-035-11 s	PIN CONNECTOR, 10P
CN4	1-564-607-11 s	PIN CONNECTOR, 6P
CN8	Δ 9-909-687-01 s	CONNECTOR ASSY 2P
CN12	9-909-688-01 s	CONNECTOR 5P
CN14	9-909-689-01 s	CONNECTOR 4P

CN16	9-909-690-01 s	CONNECTOR 2P
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<DIODE>

D31	8-719-510-26 s	DIODE D1NL20
D32	9-909-703-01 s	DIODE ERB37-10L
D41	8-719-028-45 s	DIODE D2L20U
D42	8-719-510-26 s	DIODE D1NL20
D51	9-909-704-01 s	DIODE S20LC20U

D111	8-719-510-02 s	DIODE D1NS4
D112	8-719-510-02 s	DIODE D1NS4
D113	9-909-705-01 s	DIODE D1NL60

RF21	8-719-510-71 s	DIODE D10XB60
RF111	9-909-699-01 s	DIODE S20L60

TH21	9-909-698-01 s	TRIAC AC12FGM
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<COIL>

L51	9-909-691-01 s	COIL, CHOKE
L53	9-909-692-01 s	BEAD, CORE
L54	9-909-693-01 s	BEAD, CORE
L111	Δ 9-909-695-01 s	COIL, CHOKE
L112	9-909-696-01 s	BEAD, CORE

L113	9-909-696-01 s	BEAD, CORE
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<TRANSISTOR>

Q21	9-909-700-01 s	TRANSISTOR 2SK1796
Q111	9-903-339-01 s	TRANSISTOR 2SK1016
Q112	9-903-339-01 s	TRANSISTOR 2SK1016

<RESISTOR & VARIABLE RESISTOR>

R29-1	9-909-709-01 s	METAL 100K 3W
R29-2	9-909-709-01 s	METAL 100K 3W
R30	9-909-711-01 s	METAL 39 2W
R31	9-909-712-01 s	METAL 10 3W
R32	1-249-413-11 s	CARBON 470 5% 1/4W

R33-1	Δ 9-909-713-01 s	RES. THERMAL CUTOFF 33 130°C
R33-2	Δ 9-909-713-01 s	RES. THERMAL CUTOFF 33 130°C
R38	9-909-715-01 s	METAL 0.15 5W
R47	9-909-716-01 s	CARBON 15 1/2W
R51	9-909-717-01 s	METAL 22

R94	9-909-718-01 s	CARBON 8.2 1/2W
R111	9-909-719-01 s	METAL 10 1W
R112	9-909-719-01 s	METAL 10 1W
R113	9-909-721-01 s	METAL 0.1 5W
R114	9-909-722-01 s	METAL 0.15 2W

R115	1-249-399-11 s	CARBON 33 5% 1/4W
R116	9-909-723-01 s	CARBON 820K 1/2W
R117	1-249-418-11 s	CARBON 1.2K 5% 1/4W
R118	9-909-724-01 s	CARBON 22K 1/2W
R119	1-249-410-11 s	CARBON 270 5% 1/4W

R120	9-909-725-01 s	CARBON 220K 2W
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The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

(SWITCHING REGULATOR)

Ref. No.
or Q'ty Part No. SP Description

RV111 9-909-726-01 s RES, VAR 2K 0.5W

<POSISTOR>

RT71 9-909-706-01 s POSISTOR

<VARISTOR>

SA111 9-909-707-01 s VARISTOR

<TRANSFORMER>

T1 Δ 9-909-694-01 s TRANSFORMER

PR-930039 BOARD

1pc Δ 9-909-752-01 o PRINTED CIRCUIT BOARD, PR-930039

4pcs 9-995-335-01 o CLIP, FUSE

<CAPACITOR>

C20 Δ 1-136-193-11 s FILM 0.47uF 250V
C21 Δ 1-136-193-11 s FILM 0.47uF 250V
C22 Δ 1-136-193-11 s FILM 0.47uF 250V
C23 Δ 9-995-329-01 s CERAMIC 2200p 250V
C24 Δ 9-995-329-01 s CERAMIC 2200p 250V

<CONNECTOR>

CN1 Δ 1-564-321-11 o PIN CONNECTOR, 2P
CN2 Δ 1-564-321-11 o PIN CONNECTOR, 2P

<FUSE>

F1 Δ 1-576-233-41 s FUSE 6.3A 250V
F2 Δ 1-576-233-41 s FUSE 6.3A 250V

<COIL>

L21 Δ 9-909-750-01 s COIL, CHOKE
L22 Δ 9-909-750-01 s COIL, CHOKE

<RESISTOR>

R21 9-994-152-01 o CARBON 220K

PR-930040 BOARD

1pc Δ 9-909-783-01 o PRINTED CIRCUIT BOARD, PR-930040

<CAPACITOR>

C52-1 9-909-771-01 s CERAMIC 1000p 1KV
C52-2 9-909-771-01 s CERAMIC 1000p 1KV
C56 1-128-386-11 s ELECT 1000uF 20% 35V
C57 9-909-772-01 s ELECT 560uF 35V
C61 1-128-386-11 s ELECT 1000uF 20% 35V
C62 1-128-386-11 s ELECT 1000uF 20% 35V
C63 9-909-774-01 s CERAMIC 680p 1KV
C64-1 1-128-142-11 s ELECT 1500uF 20% 25V
C64-2 1-128-142-11 s ELECT 1500uF 20% 25V
C67 9-909-776-01 s ELECT 1800uF 10V
C68 9-909-776-01 s ELECT 1800uF 10V
C70 1-136-161-00 s FILM 0.047uF 5% 50V
C79 1-128-376-11 s ELECT 220uF 20% 25V

(SWITCHING REGULATOR)

Ref. No.
or Q'ty Part No. SP Description

<CONNECTOR>

CN11 9-909-753-01 o CONNECTOR 5P
CN13 9-909-754-01 o CONNECTOR 4P
CN15 9-909-755-01 o CONNECTOR 2P
CN20 9-909-756-01 o CONNECTOR 2P

<DIODE>

D52 8-719-031-79 s DIODE D5SC4M
D72 8-719-018-83 s DIODE D2S4M
D73 8-719-912-20 s DIODE 1SS120
D75 8-719-912-20 s DIODE 1SS120
D77 8-719-018-83 s DIODE D2S4M
D78 8-719-912-20 s DIODE 1SS120
D79 8-719-912-20 s DIODE 1SS120
D80 8-719-510-02 s DIODE D1NS4

ZD71 8-719-110-04 s DIODE RD7.5ESB3
ZD73 8-719-109-85 s DIODE RD5.1ESB2
ZD74 8-719-110-36 s DIODE RD13ESB2

TH71 8-719-108-18 s THYRISTOR 5P6M

<COIL>

L52 9-909-757-01 s COIL, CHOKE
L61 9-909-758-01 s COIL, CHOKE
L62 9-909-758-01 s COIL, CHOKE
L63 9-909-760-01 s COIL, CHOKE
L64 9-909-761-01 s COIL, CHOKE

<IC & TRANSISTOR>

M61 9-909-762-01 s IC HLD05000M
M62 9-909-763-01 s IC HLD00006M
M63 9-909-764-01 s IC HLE12003M
Q72 8-729-265-52 s TRANSISTOR 2SC2655-Y

<RESISTOR>

R53 9-909-765-01 s METAL 22 2W
R61 9-909-766-01 s METAL 150 1W
R62 1-249-398-11 s CARBON 27 5% 1/4W
R63-1 9-909-767-01 s METAL 0.15 2W
R63-2 9-909-767-01 s METAL 0.15 2W
R64-1 9-901-950-01 s METAL 0.05 2W
R64-2 9-901-950-01 s METAL 0.05 2W
R65 9-901-949-01 s METAL 0.22 5W
R66 1-249-395-11 s CARBON 15 5% 1/4W
R67 1-249-417-11 s CARBON 1K 5% 1/4W
R68 1-247-827-11 s CARBON 680 5% 1/4W
R81 9-909-769-01 s METAL 0.47 5W
R82 1-247-847-11 s CARBON 4.7K 5% 1/4W
R83 1-249-397-11 s CARBON 22 5% 1/4W
R84 1-249-404-00 s CARBON 82 5% 1/4W
R87 9-909-770-01 s CARBON 47K 5% 1/4W
R88 1-249-401-11 s CARBON 47 5% 1/4W

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

(SWITCHING REGULATOR)

Ref. No.
or Q'ty Part No. SP Description

PR-930041 BOARD

1pc **A** 9-909-807-01 o PRINTED CIRCUIT BOARD, PR-930041

<CAPACITOR>

C41 1-126-233-11 s ELECT 22uF 20% 50V
C42 1-136-165-00 s FILM 0.1uF 5% 50V
C43 1-126-101-11 s ELECT 100uF 20% 16V
C44 1-136-161-00 s FILM 0.047uF 5% 50V
C45 1-136-157-00 s FILM 0.022uF 5% 50V

C46 1-136-165-00 s FILM 0.1uF 5% 50V
C48 1-128-571-11 s ELECT 56uF 20% 50V
C49 1-126-375-11 s ELECT 100uF 20% 25V
C50 1-104-865-11 s ELECT 10uF 20% 25V
C71 1-104-899-11 s ELECT 10uF 20% 50V

C73 1-126-803-11 s ELECT 47uF 20% 25V
C75 1-136-161-00 s FILM 0.047uF 5% 50V
C80 1-136-165-00 s FILM 0.1uF 5% 50V
C90 1-126-801-11 s ELECT 1uF 20% 50V
C91 1-104-781-51 s ELECT 22uF 20% 25V

<CONNECTOR>

CN17 9-909-784-01 o CONNECTOR 10P
CN18 9-909-785-01 o CONNECTOR 12P

<CIRCUIT MODULE>

CM41 **A** 9-901-943-01 s CIRCUIT MODULE RHA1B-1

<DIODE>

D44 8-719-510-26 s DIODE D1N120
D45 8-710-912-20 s DIODE 1SS120
D71 8-719-912-20 s DIODE 1SS120
D76 8-719-912-20 s DIODE 1SS120

ZD41 8-719-902-91 s DIODE HZ20-1
ZD72 8-719-927-42 s DIODE HZ27-2
ZD75 8-719-110-85 s DIODE RD36ESB4
ZD76 8-719-951-13 s DIODE HZ5CLL

PC41 **A** 8-749-923-50 s PHOTOCOUPLER PC111YS
PC42 **A** 8-749-923-50 s PHOTOCOUPLER PC111YS

TH41 8-729-101-31 s THYRISTOR N13T1

<IC>

M71 8-759-420-19 s IC AN1431T
M72 1-807-117-11 s IC TA75358P
M73 8-759-420-19 s IC AN1431T

<TRANSISTOR>

Q22 8-729-194-57 s TRANSISTOR 2SC945-P
Q41 9-909-786-01 s TRANSISTOR 2SC3456M
Q42 8-729-194-57 s TRANSISTOR 2SC945-P
Q43 8-729-194-57 s TRANSISTOR 2SC945-P
Q71 1-806-310-11 s TRANSISTOR 2SA673

<RESISTOR>

R41-1 9-909-787-01 s CARBON 150K
R41-2 9-909-787-01 s CARBON 150K
R42 9-909-788-01 s CARBON 47K 1/2W
R43 1-247-807-11 s CARBON 100 5% 1/4W
R44 1-249-417-11 s CARBON 1K 5% 1/4W

(SWITCHING REGULATOR)

Ref. No.
or Q'ty Part No. SP Description

R45 1-247-855-11 s CARBON 10K 5% 1/4W
R46 1-249-417-11 s CARBON 1K 5% 1/4W
R48-1 9-909-789-01 s CARBON 100K
R48-2 9-909-789-01 s CARBON 100K
R49-1 9-909-790-01 s METAL 4.7K

R49-2 9-909-791-01 s RES, FUSIBLE 2K 1/2W
R50 1-249-427-11 s CARBON 6.8K 5% 1/4W
R69 1-247-871-11 s CARBON 47K 5% 1/4W
R70 1-249-417-11 s CARBON 1K 5% 1/4W
R71 9-909-792-01 s CARBON 820 1/2W

R72 1-249-423-11 s CARBON 3.3K 5% 1/4W
R74 1-249-412-11 s CARBON 390 5% 1/4W
R75 1-247-825-11 s CARBON 560 5% 1/4W
R76 1-247-855-11 s CARBON 10K 5% 1/4W
R77 1-249-418-11 s CARBON 1.2K 5% 1/4W

R78 1-247-855-11 s CARBON 10K 5% 1/4W
R79 1-247-855-11 s CARBON 10K 5% 1/4W
R80 1-247-811-31 s CARBON 150 5% 1/4W
R86 1-249-418-11 s CARBON 1.2K 5% 1/4W
R85 1-247-811-31 s CARBON 150 5% 1/4W

R90 1-249-409-11 s CARBON 220 5% 1/4W
R91 1-247-871-11 s CARBON 47K 5% 1/4W
R92 1-247-855-11 s CARBON 10K 5% 1/4W
R93 1-249-433-11 s CARBON 22K 5% 1/4W
R95 9-909-793-01 s CARBON 220K

<VARIABLE RESISTOR>

RV41 9-909-794-01 s RES, VAR 5K
RV71 9-909-795-01 s RES, VAR 200
RV72 9-909-796-01 s RES, VAR 2K

MISCELLANEOUS

Ref. No.
or Q'ty Part No. SP Description

1pc **A** 1-413-994-11 o SWITCHING REGULATOR
1pc 1-467-987-11 s PANEL UNIT, LIQUID CRYSTAL IND
1pc 1-500-174-11 s HEAD, THERMAL
1pc 1-541-965-11 s MOTOR, STEPPING
1pc 1-698-549-11 s FAN, DC

1pc 1-769-389-11 s WIRE, (FLAT TYPE) (32 CORE)
1pc 1-769-534-11 s WIRE, (FLAT TYPE) (24 CORE)
1pc 1-769-535-11 s WIRE, (FLAT TYPE) (15 CORE)
1pc 1-954-208-11 o HARNESS, SUB (HDBN)
1pc 1-954-210-11 o HARNESS, SUB (HD)

1pc 1-954-211-11 o HARNESS, SUB (SY)

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

PACKING MATERIALS & SUPPLIED ACCESSORIES

Ref. No.

or Q'ty Part No. SP Description

1pc	A-8278-094-D	s ASSY, SUPPLY, TRAY(A) [for EK]
1pc	A-8278-095-E	s ASSY, SUPPLY, TRAY(L) [for UC]
1pc	A-8278-098-B	s ASSY, RIBBON HOLDER
1pc	Δ 1-590-910-11	s CORD SET, POWER [for EK]
1pc	Δ 1-534-827-14	s CORD, POWER [for UC]
1pc	3-683-192-01	s TRAY, PARER EJECT
1pc	3-686-152-01	o CUSHION, TOP
1pc	3-686-153-01	o CUSHION, BOTTOM
1pc	3-686-154-01	o INDIVIDUAL CARTON
1pc	3-704-355-01	o SHEET (STADARD), PROTECTION
1pc	3-798-039-11	s MANUAL, INSTRUCTION [for EK]
1pc	Δ 3-798-039-21	s MANUAL, INSTRUCTION [for UC]

HARDWARE LIST

Part No. SP Description

7-624-105-04	s STOP RING 2.3, TYPE -E
7-624-106-04	s STOP RING 3.0, TYPE -E
7-624-109-04	s STOP RING 5.0, TYPE -E
7-627-554-58	s SCREW +P 2X2.8
7-628-253-95	s SCREW +PS 2.6X4
7-682-646-09	s SCREW +PS 3X5
7-682-951-01	s SCREW +PSW 3X14
7-683-238-01	s SET-SCT, HEX. 3X4 FLAT POINT
7-685-645-79	s SCREW +BVTP 3X6 TYPE2 N-S
7-685-648-79	s SCREW +BVTP 3X12 TYPE2 N-S
7-685-863-01	s SCREW +BVTT 2.6X8(S)
7-685-871-01	s SCREW +BVTT 3X6(S)
7-685-872-01	s SCREW +BVTT 3X8(S)
7-685-874-01	s SCREW +BVTT 3X12(S)
7-685-877-01	s SCREW +BVTT 3X20(S)
7-685-878-01	s SCREW +BVTT 3X25(S)

SECTION 7

MECHANICAL OPERATION

7-1. MOTOR

motor name	main function
1. Capstan drive motor (stepping motor)	<ul style="list-style-type: none"> • Drive of capstan roller • Drive of delivery roller
2. Head drive motor (DC motor)	<ul style="list-style-type: none"> • UP/DOWN of head <ol style="list-style-type: none"> 1) Home position 2) Ribbon forward & printing paper forward position 3) Printing position • Drive of pinch roller <ol style="list-style-type: none"> 1) Pressure 2) Release • Drive of delivery pinch roller <ol style="list-style-type: none"> 1) Pressure 2) Release
3. Ribbon take-up motor (DC motor)	<ul style="list-style-type: none"> • Drive of ribbon rewind reel (take-up)
4. Ribbon supply motor (DC motor)	<ul style="list-style-type: none"> • Drive of ribbon rewind reel (Supply)
5. Feed paper motor (DC motor)	<ul style="list-style-type: none"> • Drive of feed roller • Drive of pick-up roller • Drive of bar code detection gear
6. Feed lever motor (DC motor)	<ul style="list-style-type: none"> • Drive of feed lever <ol style="list-style-type: none"> 1) Home position 2) Printing position 3) Feed paper position • Control of bar code detection <ol style="list-style-type: none"> 1) Bar code detection possible 2) Bar code detection impossible • Drive of separation roller <ol style="list-style-type: none"> 1) Pressure 2) Release

7-2. TIMING OF MECHANICAL OPERATION

Mechanical operation separates thermal head UP/DOWN operation for four positions. The following three operations are performed one motor (Head drive motor) by assembling cam composition and link composition. Feed lever operation and control of bar code detection gear are performed by another motor (Feed lever motor).

Following is the timing table.

Head drive motor

Position	0	1	2	3
Operation	Home position	Beginning detection of ribbon & paper feed	Print paper forward rewind, delivery paper	Printing
Head	UP	MIDDLE	MIDDLE	DOWN
Capstan	OFF	OFF	ON	ON
Delivery roller	ON	ON	OFF	OFF

Feed lever motor

Position	0	1	2
Operation	Home position	Except feed paper	Feed paper
Feed lever	DOWN	MIDDLE	UP
Separation roller	OFF	ON	ON
Bar code detection	Impossible	Possible	Impossible

Each element operation timing by mechanical operation

Operation \ Element	Head position	Head	Capstan	Delivery roller	Arm position	Feed lever	Separation roller	Bar code detection
Home	0	UP	OFF	ON	0	DOWN	OFF	Impossible
Bar code detection	1	MIDDLE	OFF	ON	1	MIDDLE	ON	Possible
Beginning detection of ribbon and paper feed	1	MIDDLE	OFF	ON	2	UP	ON	Impossible
Pinch roller pressure	2	MIDDLE	ON	OFF	1	MIDDLE	ON	Possible
Printing	3	DOWN	ON	OFF	1	MIDDLE	ON	Possible
Printing paper rewind	2	MIDDLE	ON	OFF	1	MIDDLE	ON	Possible
Delivery paper	1	MIDDLE	OFF	ON	1	MIDDLE	ON	Possible
Printing end	0	UP	OFF	ON	0	DOWN	OFF	Impossible

Thermal head :

UP→Thermal head is separated largely from platen.

MIDDLE→Thermal head is separated little from platen.

DOWN→Thermal head is pressed to platen.

Capstan :

ON→Pinch roller is pressed to capstan.

OFF→Pinch roller is separated from capstan.

Delivery roller:

ON→Delivery pinch roller is pressed to delivery roller.

OFF→Delivery pinch roller is separated from delivery roller.

Feed lever :

UP→Printing paper is pressed to pick-up roller.

MIDDLE→Printing paper is separated from pick-up roller, but feed tray can not be removed.

DOWN→Feed tray can be removed.

Separation roller :

ON→Separation roller is pressed to feed roller.

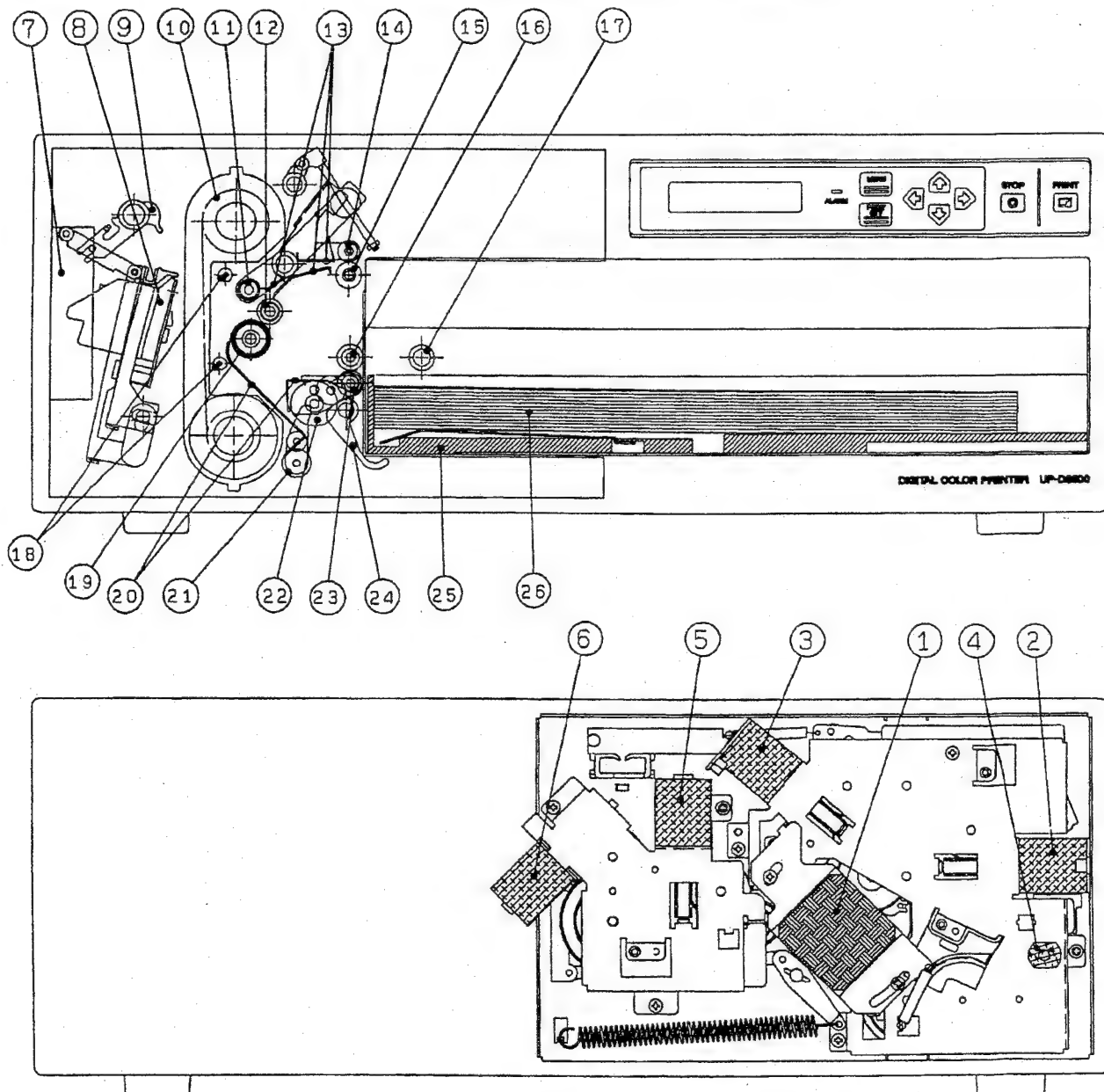
OFF→Separation roller is separated from feed roller.

Bar code detection

Possible→Detection gear is engaged bar code ring.

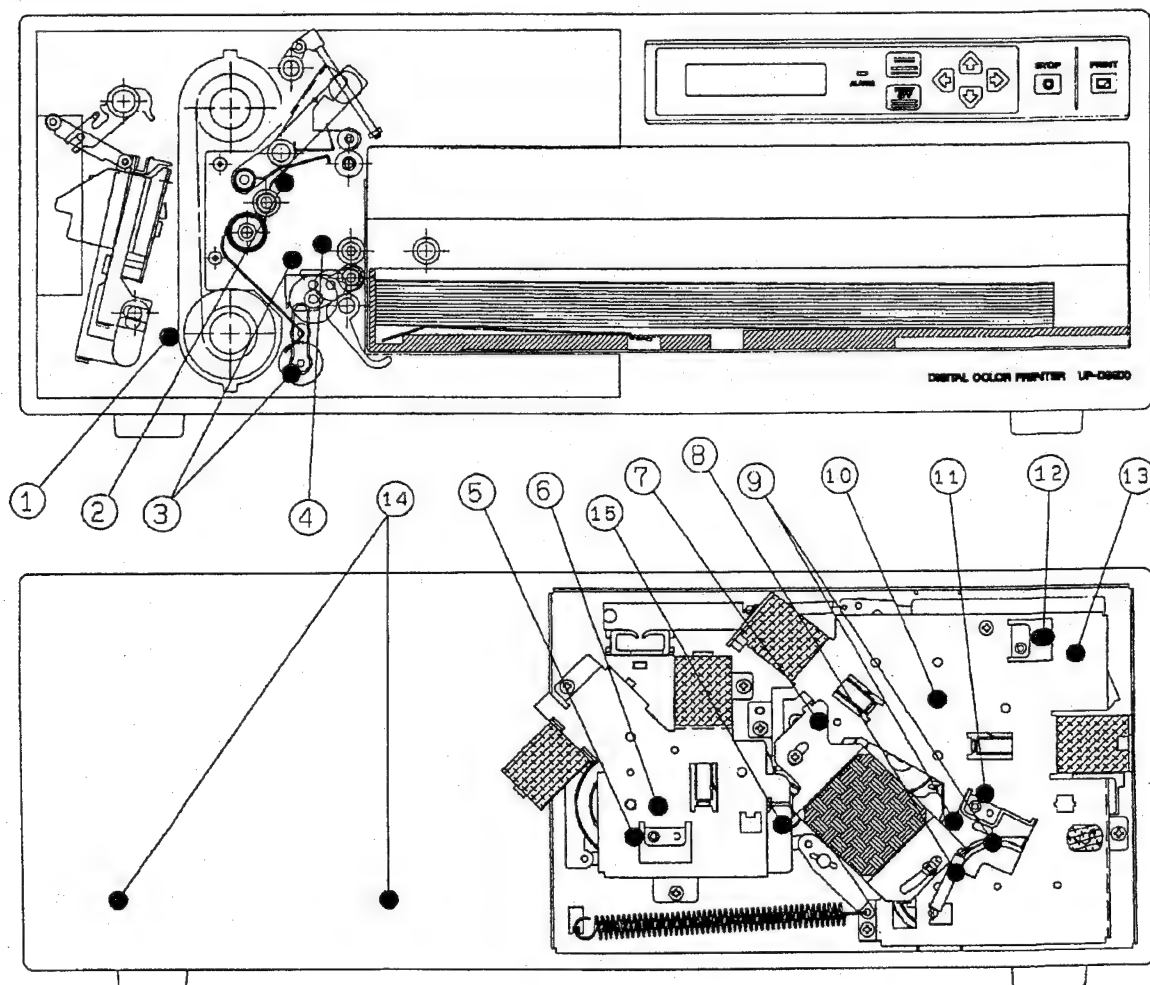
7-3. MECHANICAL SECTION OUTLINE

No.	Name	No.	Name	No.	Name
1	Capstan drive motor	10	Ink ribbon	19	Platen
2	Head drive motor	11	Pinch roller	20	Feed guide
3	Ribbon take-up motor	12	Capstan	21	Bar code detection gear
4	Ribbon supply motor	13	Delivery guide	22	Torque limiter for separation roller
5	Feed motor	14	Delivery pinch roller	23	Separation roller
6	Feed lever motor	15	Delivery roller	24	Feed lever
7	Fan for head cooling	16	Feed roller	25	Feed tray
8	Thermal head	17	Pick-up roller	26	Printing paper
9	Head drive cam	18	Ribbon guide roller		



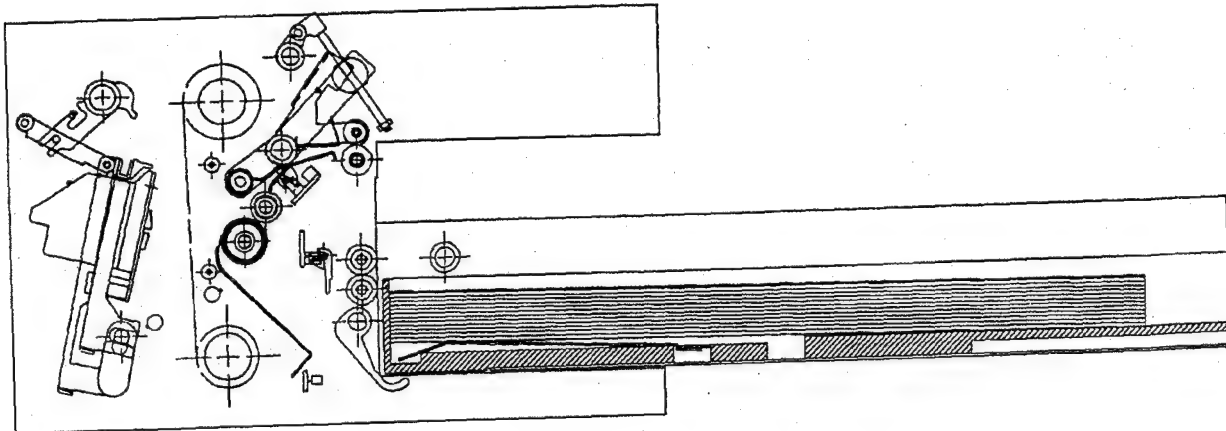
7-4. POSITION AND FUNCTION FOR SENSOR

No.	Name	Kind of sensor	Function
1	Bar code sensor	Reflector	Detect the kind of ribbon
2	Paper edge sensor	Mechanical shutter & interrupter	Beginning detection of printing paper, jamming detection
3	OHP sensor	Transmission	Discrimination of OHP
4	PASS 0 sensor	Mechanical shutter & interrupter	Detection of feed paper, jamming detection
5	Lever home sensor	Interrupter	Home detection of feed lever
6	Lever position sensor	Interrupter	Position detection of feed lever
7	PASS 1 sensor	Interrupter	Abnormal detection of stepping motor
8	Supply FG sensor	Interrupter	Detection of ribbon rotation, sending quantity and diameter
9	Ribbon code sensor	Transmission	Beginning detection of ribbon
10	Take-up FG sensor	Interrupter	Detection of ribbon rotation, sending quantity and diameter
11	Cassette eject sensor	Interrupter	Detect whether ribbon cassette is set or not
12	Head home sensor	Interrupter	Home detection of head
13	Head position sensor	Interrupter	Head position detection
14	Paper size sensor	Interrupter	Discrimination of paper size
15	Load FG sensor	Interrupter	Rotation detection of feed roller



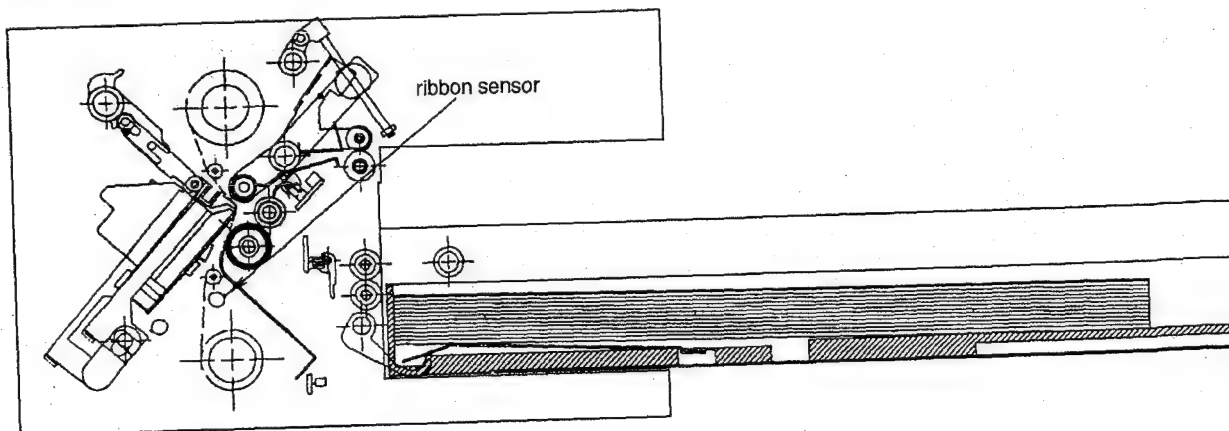
7-5. PRINTING OPERATION DESCRIPTION

Fig. (1)



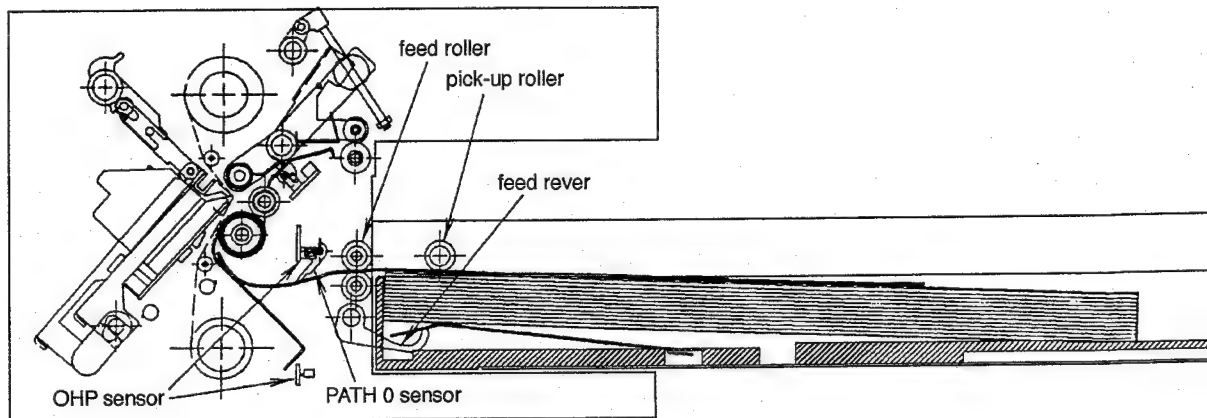
1. Initial condition
Feed tray and ribbon cassette can be removed freely.
2. Depress the print key.
Starting indication of printing operation.

Fig. (2)



3. Search for the beginning of the yellow ribbon
 - Feed lever and head are set to MIDDLE position. Ribbon cassette and feed tray can not be removed.
 - Ribbon take-up motor is rotated, ribbon is rewound, if starting mark comes, count of ribbon quantity is set to 100.
 - Ribbon diameter is calculated from take-up and supply FG sensor count quantity of distance between two ribbon codes before yellow ribbon.
 - If ribbon is stopped before coming two ribbon code, it is judged ribbon end.
 - Ribbon is stopped.

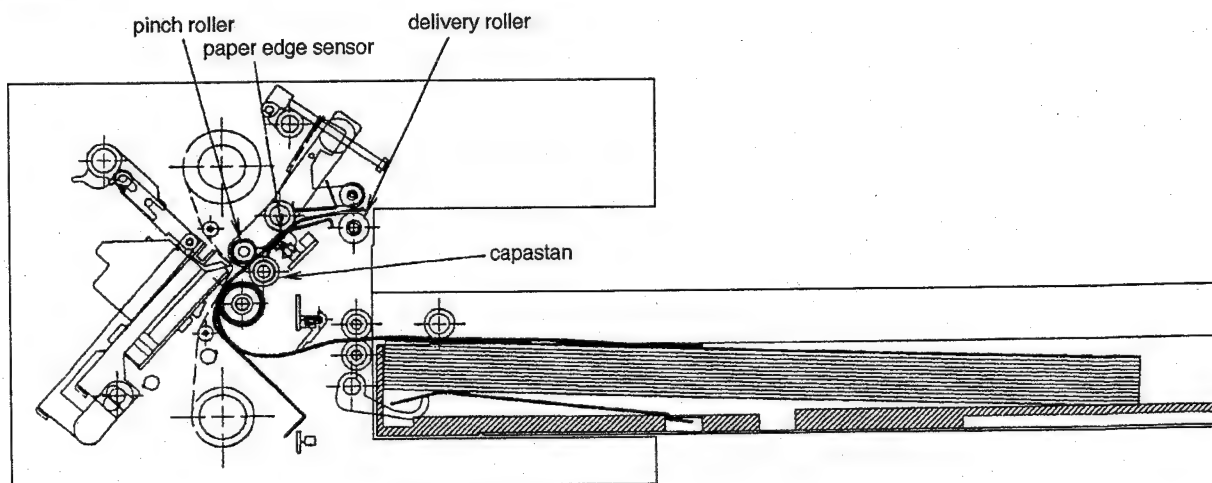
Fig. (3)



4. Feed paper operation

- Feed lever is positioned to UP. Pick-up roller and feed roller are rotated, printing paper is transported from feed tray.
- When paper passes the PASS 0 sensor, whether OHP or ordinary paper is judged by transmitting or not the OHP sensor.

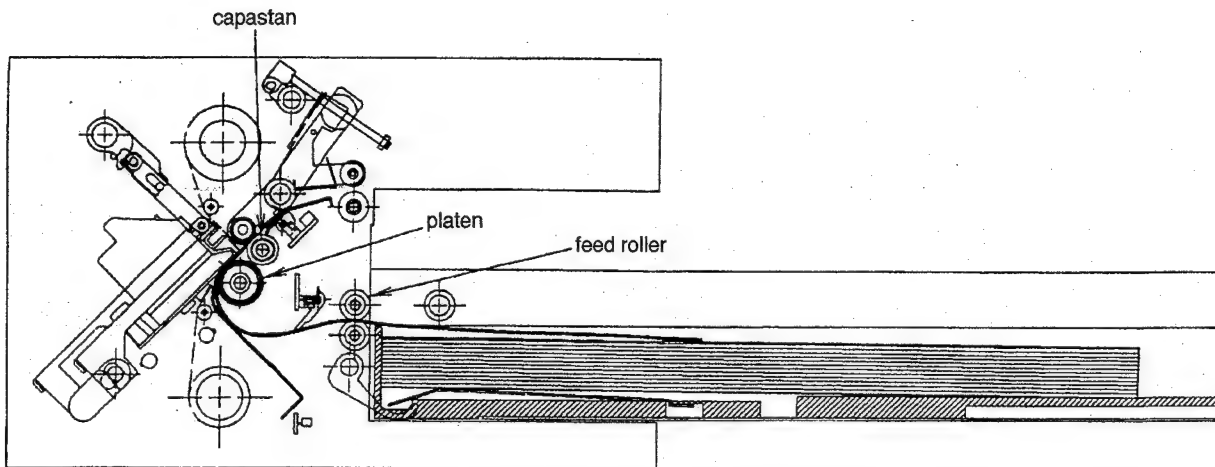
Fig. (4)



5. Loading operation

- In case, to print the ordinary paper, paper feed is performed by turning and operating the ribbon take-up motor.
- When printing the OHP, paper feed is performed by supply motor while it presses the ribbon.
- When printing paper comes to paper edge sensor, ribbon take-up motor is stopped, and then printing paper is sent by feed motor to delivery roller. And the ribbon is more sent 10mm, and feed roller is stopped.
- The slacken of the ribbon is taken by supply motor, printing paper is transported 10 and a few mm by rotating little delivery roller, bend of printing paper is corrected.
- Pinch roller is pressed to capstan.

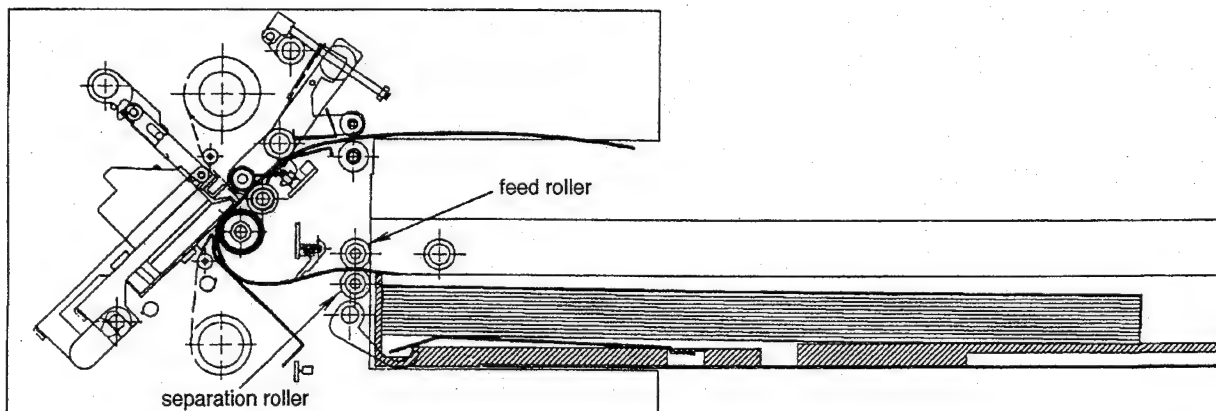
Fig. (5)



6. Beginning detection of printing paper

- In case ordinary paper, as paper feed is performed while ribbon is sent, ribbon is rewound to the position where after beginning detection of ribbon. In case the OHP, printing paper is rewound without ribbon rewind.
- At that time, capstan and feed roller are rotated reversely. Printing paper passes through paper edge sensor, and is rewound to just before removing the capstan.
- Ribbon is sent to true printing position from ribbon code.
- While ribbon is back tensioned by supply motor, picture comes to center of the printing paper by operating the feed roller and capstan, after that the head is pressed to platen.

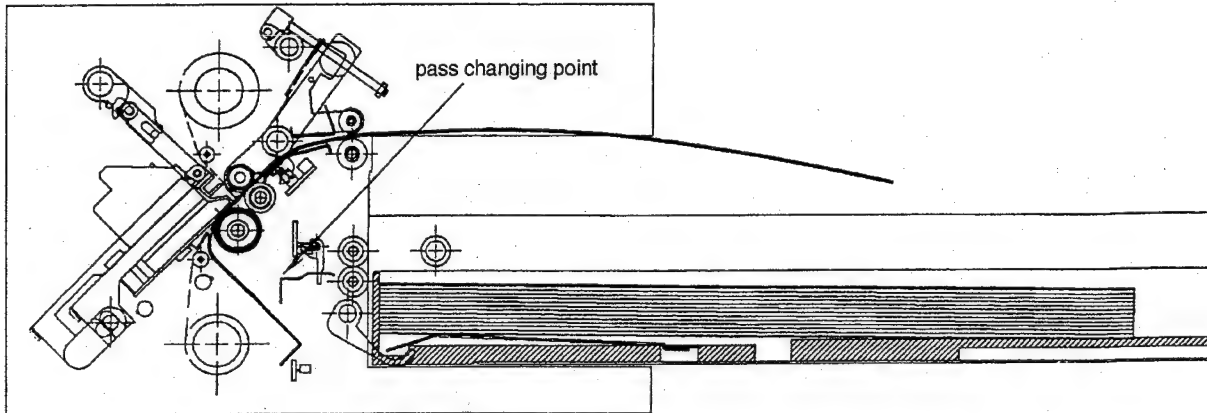
Fig. (6)



7. Yellow printing

- Ribbon take-up and ribbon supply motors are rotated so that tension becomes calculated value from ribbon diameter.
- After capstan rotates 1mm without loading, yellow color printing is performed. At that time, until printing paper is separated from separation roller, feed roller is rotated to coincide with printing speed.
- After printing, feed roller rotates 1mm without loading.

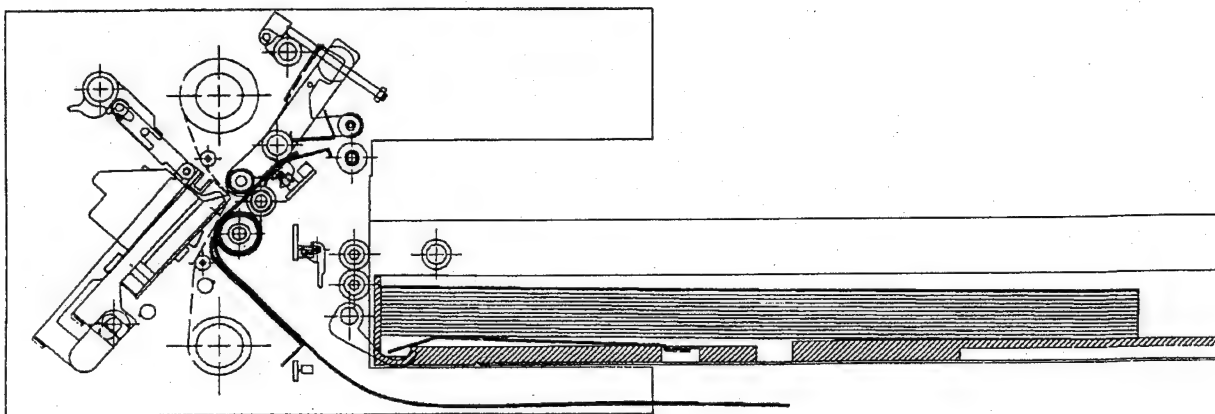
Fig. (7)



8. Yellow printing completion, and the ribbon sticking and peeling off.

- After yellow printing, in case the most rear edge of printing paper does not come to the pass changing point. While ribbon is operated, printing paper is more sent about 10mm. Ribbon and printing paper after printing are peeled off. After that, head is set at MIDDLE position. Printing paper is sent until printing paper comes the pass changing point.
- After yellow printing, in case the most rear edge of printing paper overs the pass changing point. Head is set to MIDDLE position. Ribbon take-up motor is rotated reversely little to slacken the ribbon. Printing paper is rewound about 30mm by ribbon supply motor with back tension, ribbon and printing paper after printing are peeled off.

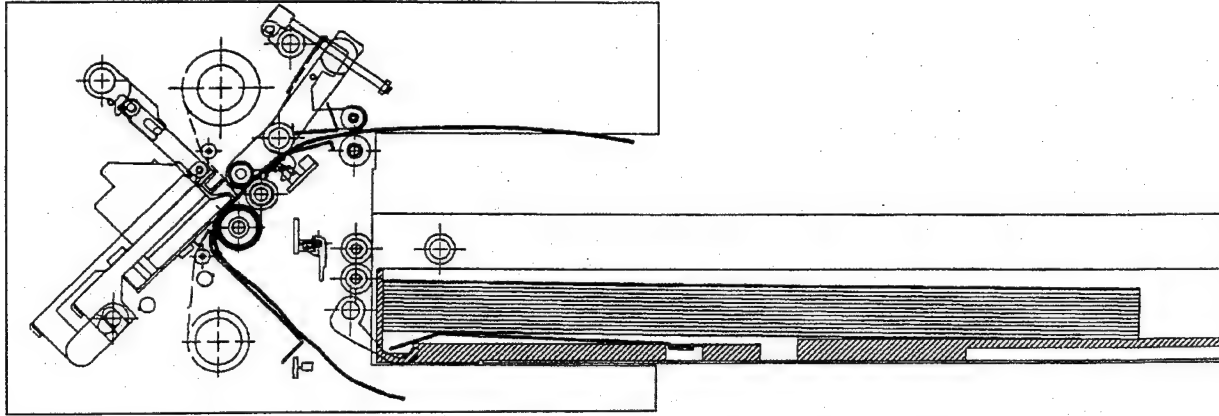
Fig. (8)



9. Return of printing paper & beginning detection of magenta ribbon

- In case ordinary paper, while ribbon is sent to next ribbon code, the printing paper is returned to the printing position by rotating capstan reversely.
- In case OHP, printing paper is returned to the printing position by rotating capstan reversely, ribbon is sent to next ribbon code.
- After that, ribbon is sent from ribbon code to true print position.

Fig. (9)



10. Magenta printing

- The head is pressed to the platen. Ribbon take-up and ribbon supply motors are rotated so that the tension becomes calculated value from ribbon diameter.
- After capstan rotates 1mm without loading, magenta color printing is performed.
- After printing, capstan rotates 1mm again without loading.

11. Magenta printing completion, and the ribbon sticking and peeling off

- Same as Fig(7). After printing magenta, head is set at MIDDLE position. Ribbon is slackened by little rotating reversely ribbon take-up motor. While ribbon is tensioned toward rear by ribbon supply motor, printing paper is returned 30mm, ribbon and printing paper after printing are peeled off.

12. Return of printing paper & beginning detection of cyan ribbon

- Same as Fig(8), operation description is same as 9.

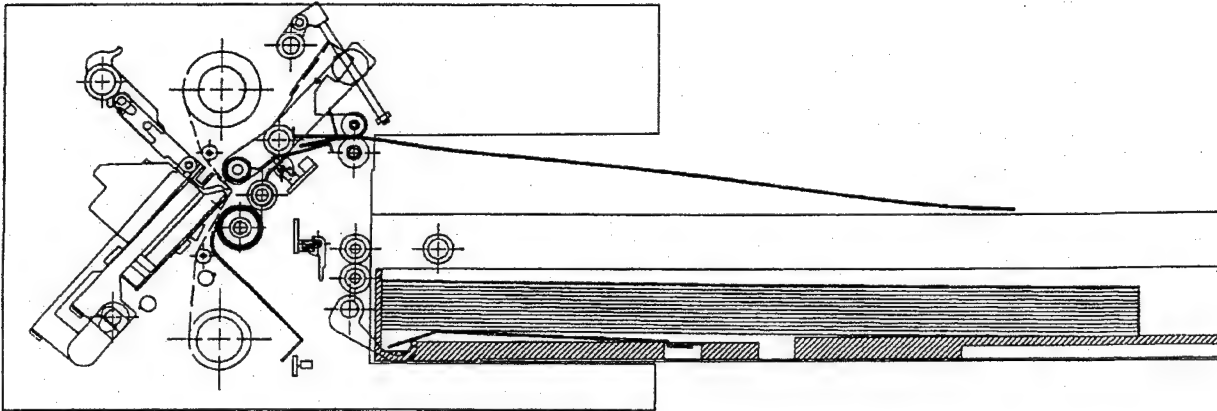
13. Cyan printing

- Same as Fig(9), operation description is same as 10.

14. Cyan printing completion, and the ribbon sticking and peeling off

- Same as Fig(7). After printing cyan, while ribbon is moved as it is, printing paper is more sent about 8mm, ribbon and printing paper after printing are peeled off.

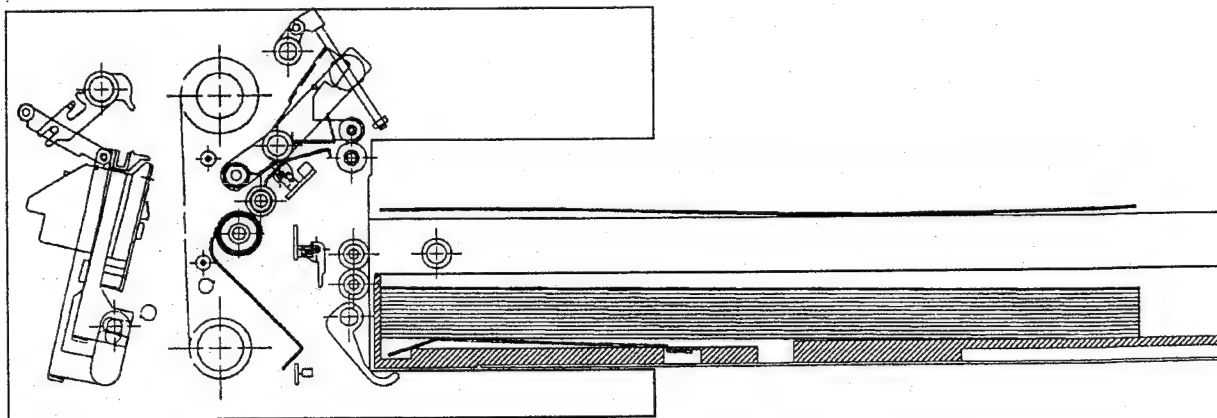
Fig. (10)



15. Delivery paper operation

- Head is separated from platen, pinch roller is separated from capstan, delivery pinch roller is pressed to delivery roller.
- Slack of ribbon is taken by ribbon supply motor. After that printing paper is passed through delivery roller completely by rotating capstan and delivery roller.

Fig. (11)



16. Operation after delivery paper

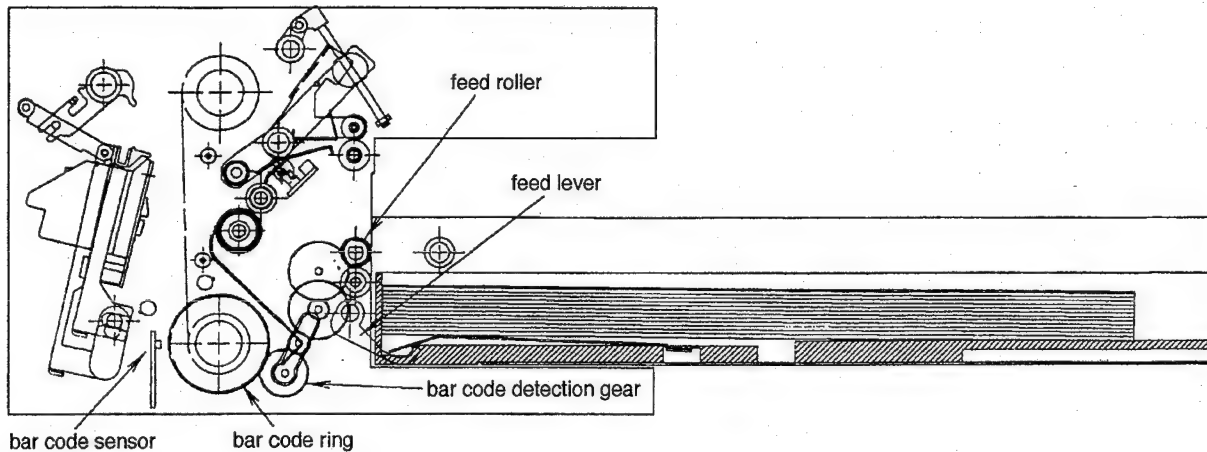
- Feed lever is positioned to UP, once printing paper is engaged feed roller by rotating feed motor 300ms correctly. After that, feed lever is positioned to MIDDLE, and feed motor is rotated 400ms reversely. Furthermore, feed lever is positioned to UP, feed motor is rotated 200ms reversely. This means that printing papers out of feed tray are returned to the feed tray. (This means to prevent slack of rear portion of remaining printing paper in the feed tray.)
- Feed lever is positioned to MIDDLE.
- Ribbon is rotated to beginning of next yellow.
- Head and feed lever are positioned to home position, ribbon cartridge and lock of feed tray is released. The unit becomes on standby mode.

17. All operation is completed.

7-6. TIMING FOR BAR CODE DETECTION

- 1) With ribbon cassette is inserted, the time when power switch is turned on.
- 2) Once ribbon cassette is removed, it is inserted again, and the time when printing is performed.
- 3) Once ribbon cassette is removed, it is inserted again, the time when ribbon quantity is ensured by QTY key.

Operation of bar code detection



1. Feed lever is positioned for printing.
2. Feed roller is rotated reversely, bar code ring is rotated by engaging bar code detection gear.
3. Bar code sensor detects the bar code.

SECTION 8

CIRCUIT OPERATION DESCRIPTION

8-1. SY-12 BOARD, MEC-2 BOARD CIRCUIT OPERATION DESCRIPTION

SY-12 board is composed by system control block and mechanism control block and thermal head control block. These each block processes or controls following items.

- System control section
 - program transmission to each circuit board
 - transmission control between each circuit boards
 - control of key
 - LCD indication
- Mechanism control section
 - control of each motor
 - process of each sensor
- Thermal head control section
 - gamma correction
 - head voltage control
 - data transmission from memory
 - picture quality correction (PQC IC)
 - head data transmission

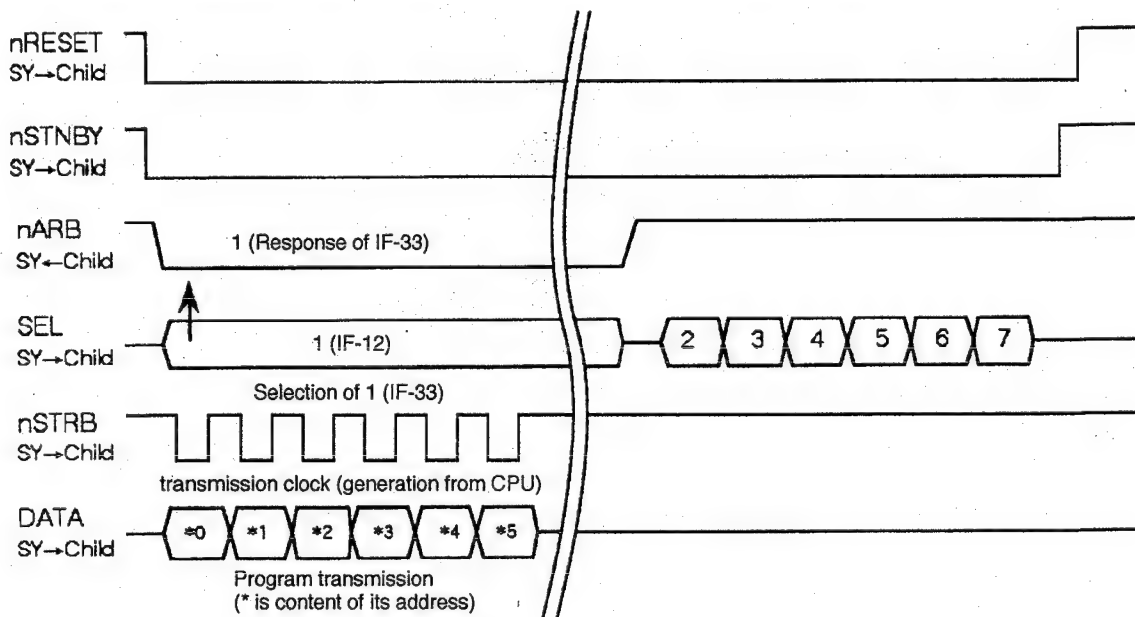
MEC-2 board is composed by drive IC of each motor, sensor detection circuit, sensor LED control circuit and EEPROM.

8-1-1. System Control Section

(1) Program transmission to each circuit board

When SY-12 board is rising, nRESET and nSTNBY are set to L and sent them to each circuit board CPU in order to stand by hardware. And the program is sent to SRAM of each circuit board.

Following figure is sending chart from SY-12 board to IF-33 board (SEL=1).



(2) Address map

Program data for transmission to IF-33 and FMY-15 boards are registered at IC102 on SY-12 board. IC102 is divided by three parts, each part registers SY-12, IF-33 and FMY-15 boards program individually.

As address space of CPU of SY-12 board is 64kB, memory bank changing is performed at B0.

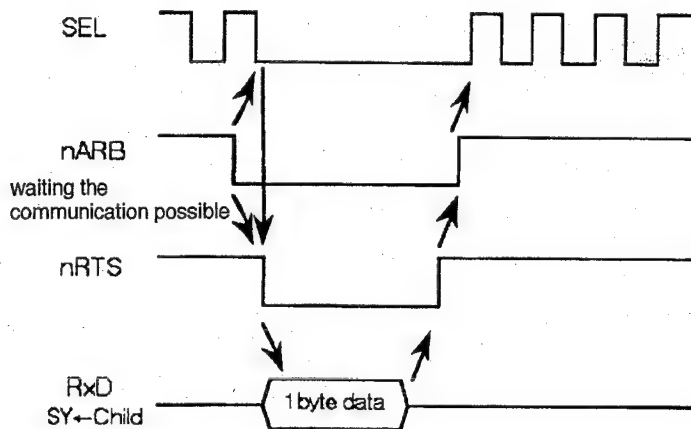
SY-12 Program 00000-0FFFFH	00000H-0EFFFH	Program
	0F000H-0F0FFH	Gamma SRAM
	0F100H-0F2FFH	VDC IC
IF-33 Program 10000-17FFFH	0F300H-0F4FFH	PQC IC
	0F500H-0F503H	IC105 (Bus control)
	0F510H-0F513H	IC106 (Motor/Sensor)
SY-12 Program 18000-1FFFFH	0F520H	LCD
	0F530H-0F531H	Average resistance value
	0F540H	Sensor
	0F780H-0FB7FH	Reserve
	0FB80H-0FF80H	1KB SRAM
	0FF88H-0FFFFH	I/O port

(3) Transmission control between each board

Serial communication between each board (SY-12 board \Leftrightarrow other board) is performed by time division mutual toward one system.

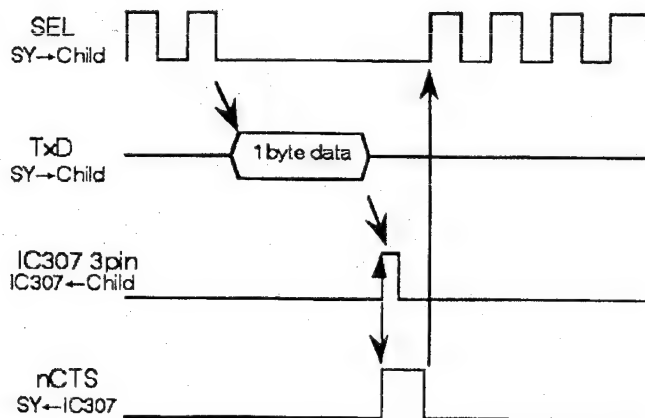
Sequence of this timing division is performed as follows. Baud rate is 31250bps.

●When receiving (Child data \Rightarrow SY-12 board)



- 1) Before data sending, child board sets nARB to L.
- 2) SY-12 board ensures nARB to L, SY-12 board stops rotation of nSEL and lowers nRTS.
- 3) Child board sends the data 1byte.
- 4) SY-12 board ups RTS, child ups nARB.
- 5) When nARB is upped, SY-12 board opens rotation again.

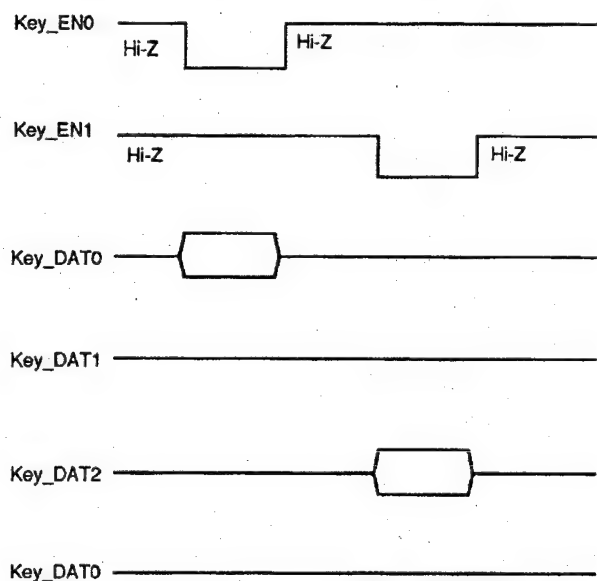
●When transmitting (SY-12 board data \Rightarrow Child)



- 1) SY-12 board stops rotation by child which want to send SEL.
- 2) SY-12 board sends 1byte data.
- 3) Child board ups RTS, CTS of SY-12 board is upped by beating clock of IC307 (D,FF) SY-12 board.
- 4) SY-12 board ensures CTS was upped, and clears CTS again to reopen rotation.

(4) Key control

Key control is composed by two control wire (KEY_EN0,1:key scan) and four data wire (KEY_DAT0-3: key information). Following figure is key control timing chart. Lower right side table is key matrix.



	KEY_EN0	KEY_EN1
KEY_DAT0	MENU	RIGHT
KEY_DAT1	QTY	LEFT
KEY_DAT2	PRINT	UP
KEY_DAT3	STOP	DOWN

(5) LCD control

Control wire of LCD module is eleven of D0-7, R, R-nW, nE. Data wire of D0-7 is connected to data bus via mutual toward buffer of IC107.

8-1-2. Mechanism Control Section

(1) Capstan motor control

Capstan is driven by a stepping motor. Excitation system of stepping motor uses 1-2 phase excitation system (negative logic). This motor (CN4 2-5) rotates delivery roller and capstan by head position.

Drive IC, IC101 (MEC-2 board) performs constant current drive. And when printing 150dpi, width of 1 line becomes two times by rotating two times motor speed.

(2) Head motor drive

This motor performs the thermal head up and down. This motor and head home position sensor (describe later) move thermal head four positions, home, feed paper, paper sending, printing. (CN4 10, 11)

Drive IC is IC102 (MEC-2 board).

	CN4 10pin	CN4 11pin
UP	1	0
DOWN	0	1
BRAKE	1	1
OTHERS	0	0

(3) Feed lever motor drive

This motor performs feed lever up and down. Feed lever has three positions home, printing, feeding paper. (CN4 8, 9)

Drive IC is IC105 (MEC-2 board).

	CN4 8pin	CN4 9pin
UP	1	0
DOWN	0	1
BRAKE	1	1
OTHERS	0	0

(4) Feed roller motor drive

This motor rotates feed roller, pick-up roller and bar-code gear. When feed lever is positioned at printing, bar-code gear transmits power by rotating reversely. And when yellow printing bar-code gear controls rotation of feed roller by PWM driving.

(CN4 6, 7)

Drive IC is IC106 (MEC-2 board).

	CN4 6pin	CN4 7pin
Feeding direction	1	0
Reverse direction	0	1
BRAKE	1	1
OTHERS	0	0

(5) Ribbon take-up motor drive

This motor is used to take-up ink ribbon. This motor stabilizes to constant the tension of ink ribbon by PWM driving. Take-up motor controls only ribbon sending direction by PWM. (CN4 12, 13)

Drive IC is IC104 (MEC-2 board).

	CN4 12pin	CN4 13pin
Sending direction	1	PWM
Reverse direction	0	1
BRAKE	1	1
OTHERS	0	0

(6) Ribbon supply motor drive

This motor controls rear-tension of ink ribbon. This motor is controlled with PWM (both directions of ribbon) to stabilize constantly the rear-tension of ink ribbon. (CN4 14, 15)

Drive IC is IC103 (MEC-2 board).

	CN4 14pin	CN4 15pin	IC106 9pin	IC106 13pin	IC101 46pin
Feeding direction	1	PWM	1	0	PWM
sending direction	PWM	1	0	1	PWM
BRAKE	1	1	1	1	X
OTHERS	0	0	0	0	0

(7) Fan motor drive

Fan motor operates during printing and the time when head cooling is needed.
(CN4 16)

(8) Take-up/supply ribbon FG sensor (CN5 8, 9)

Function : These FG sensors detect each rotation of take-up or supply motor.
Level : Rectangle wave output
Check method : Self diagnosis

(9) PATH 0 sensor (CN5 16)

Function : This is mechanism sensor that is placed at rear of feed roller. As this is mechanism sensor, this sensor can judge the path without discrimination of OHP sheet or ordinary paper. This is composed by photo interruptor and shutter.
Level : When passing through the paper, sensor indicates H.
Check method : Self diagnosis

(10) PATH 1 sensor (CN5 17)

Function : This sensor detects rotation of stepping motor and detects condition of the motor.
Level : Rectangle wave output
Check method : Self diagnosis

(11) Paper edge sensor (CN5 10)

Function : This is mechanism sensor that is placed at rear of capstan roller. Same as PATH 0 sensor, this is mechanism sensor, so, this sensor can judge the path without discrimination of OHP sheet or ordinary paper. This is also composed by photo interruptor and shutter.
Level : When passing through the paper, sensor indicates H.
Check method : Self diagnosis

(12) Paper size sensor (CN5 12, 14)

Function : This sensor detects printing paper size in the feed tray. Two sensors judge paper size and whether there is paper or not.
Level : When depressing the sensor, indication is H.
Check method : Self diagnosis

(13) Load FG sensor (CN4 18)

Function : This sensor detects rotation of load motor.
Level : Rectangle wave output
Check method : Self diagnosis

(14) Head home/position sensor (CN5 4, 5)

Function : This sensor detects position of thermal head.
Level : Refer to lower table.
Check method : Self diagnosis

Head position	Home sensor	Position sensor
Home position	0	1
Position 1, 2, 3	1	0
OTHERS	1	1

(15) Feed paper lever home/position sensor (CN5 6, 7)

Function : This sensor detects position of feed paper lever.
Level : Refer to lower table.
Check method : Self diagnosis

Lever position	Home sensor	Position sensor
Home position	0	1
Position 1, 2	1	0
OTHERS	1	1

(16) Ribbon cassette sensor (CN5 2)

Function : This sensor detects whether there is ink ribbon cassette or not.
This is also mechanism sensor that is composed by photo interrupter and shutter.

Level : When depressing the sensor, indication is H.

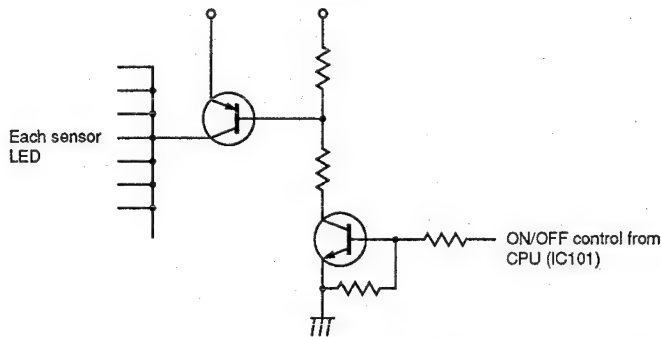
Check method : Self diagnosis

(17) LED_ON_nOFF Circuit (CN5 18)

Function : This circuit turns ON or OFF LED of each sensor between items (8)→(16) This is performed self diagnosis of each sensor.

Level : Usual (when LED lights ON) is H.

Check method : When performing self diagnosis, if all sensors are error, this circuit may be damaged.

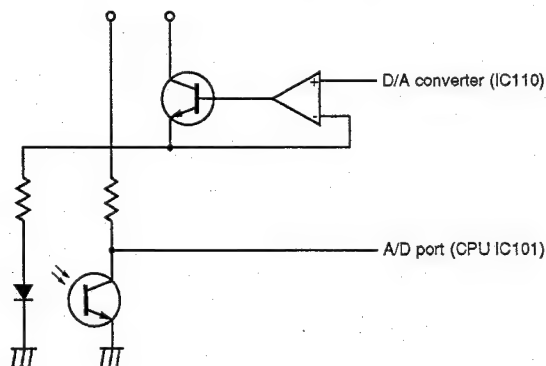


(18) Bar-code sensor/luminance quantity adjustment (CN5 11, 20)

Function : This reflection sensor reads 12bit bar-code attached to ink ribbon. Pair LED luminance is set to obtain the most suitable luminance quantity. When reading ribbon code every time, the threshold level value for judging L or H is changed to the most suitable value.

Level : Reflection portion of bar-code is L, black portion is H.

Check method : Ribbon cassette with bar-code is inserted, and make sure that ribbon error is not indicated. (Self diagnosis can not be obtained.)
If ribbon error is indicated, make sure the threshold level and, feed lever should be positioned at printing, load motor should be rotated reversely, make sure sensor output.



(19) Ribbon code sensor/luminance quantity adjustment (CN5 3, 19)

Function : This is transmission type sensor that reads ribbon code and stating mark on the ink ribbon. Pair LED luminance is set to obtain the most suitable luminance quantity. When reading ribbon code every time, the threshold level value for judging L or H is changed to the most suitable value.

Level : Ribbon code portion is H, others are L

Check method : Make sure the threshold level, ribbon cassette should be inserted, ribbon should be rotated correctly, make sure the sensor output.

(20) OHP sensor/luminance quantity adjustment (CN5 15, 21)

Function : This is transmission type sensor that detects paper kind after feeding paper. Pair LED luminance is set to obtain the most suitable luminance quantity. When reading ribbon code every time, the threshold level value for judging L or H is changed to the most suitable value.

Level : Ordinary paper is H, OHP is L.

Check method : Make sure the threshold level, paper should be pass, and make sure sensor output.

(21) Head thermistor (CN7 27)

Function : This thermistor measures temperature of the thermal head.

Level : Approximately 2.5V at the normal temperature (25°C)

Check method : Measure the voltage of thermistor.

(22) Room thermistor (CN4 17)

Function : This thermistor measures the temperature at the inside of the unit.

Level : Approximately 2.5V at the normal temperature (25°C)

Check method : Measure the voltage of thermistor.

8-1-3. Thermal Head Control Section

Data current of thermal head control section is as follows.

Memory→Gamma correction→Picture quality correction IC→Resistance value correction→Drive IC→Thermal head

(1) Gamma correction IC

The program ROM (IC101) has gamma correction curved lines. When printing, the most suitable gamma curved line (the temperature, the kind of paper) is sent to gamma correction SRAM (IC203). And is memorized. Self diagnosis of address and data bus of gamma SRAM peripheral can be performed.

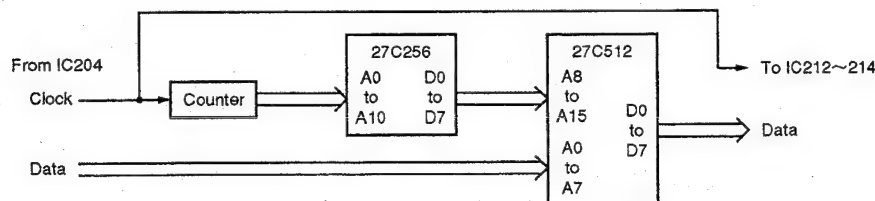
(2) Picture quality correction

IC204 outputs request signal to the memory at rising edge of PRINT_PLS0 from CPU. And receive the data (via gamma correction).

IC204 performs edge emphasis and heat store correction and outputs to next by 1 line delay.

(3) Resistance value correction

This is composed by two ROMs, IC209 (Resistance value data of the head) and IC210 (Resistance value correction curved line).



(4) Drive IC

IC212, 213 and 214 output request signal to IC204 at rising edge of PRINT_PLS1 from IC204. And receive the data (via resistance value correction), and send PWM converted data to the head by 1 line delay.

Output data of IC212: CN7 1 to 8

Output data of IC213: CN7 9 to 16

Output data of IC214: CN7 17 to 20

Furthermore, IC212 outputs HED_CLK (CN7 22) and HED_LATCH (CN7 24) to the head.

(5) Line quantity correction IC

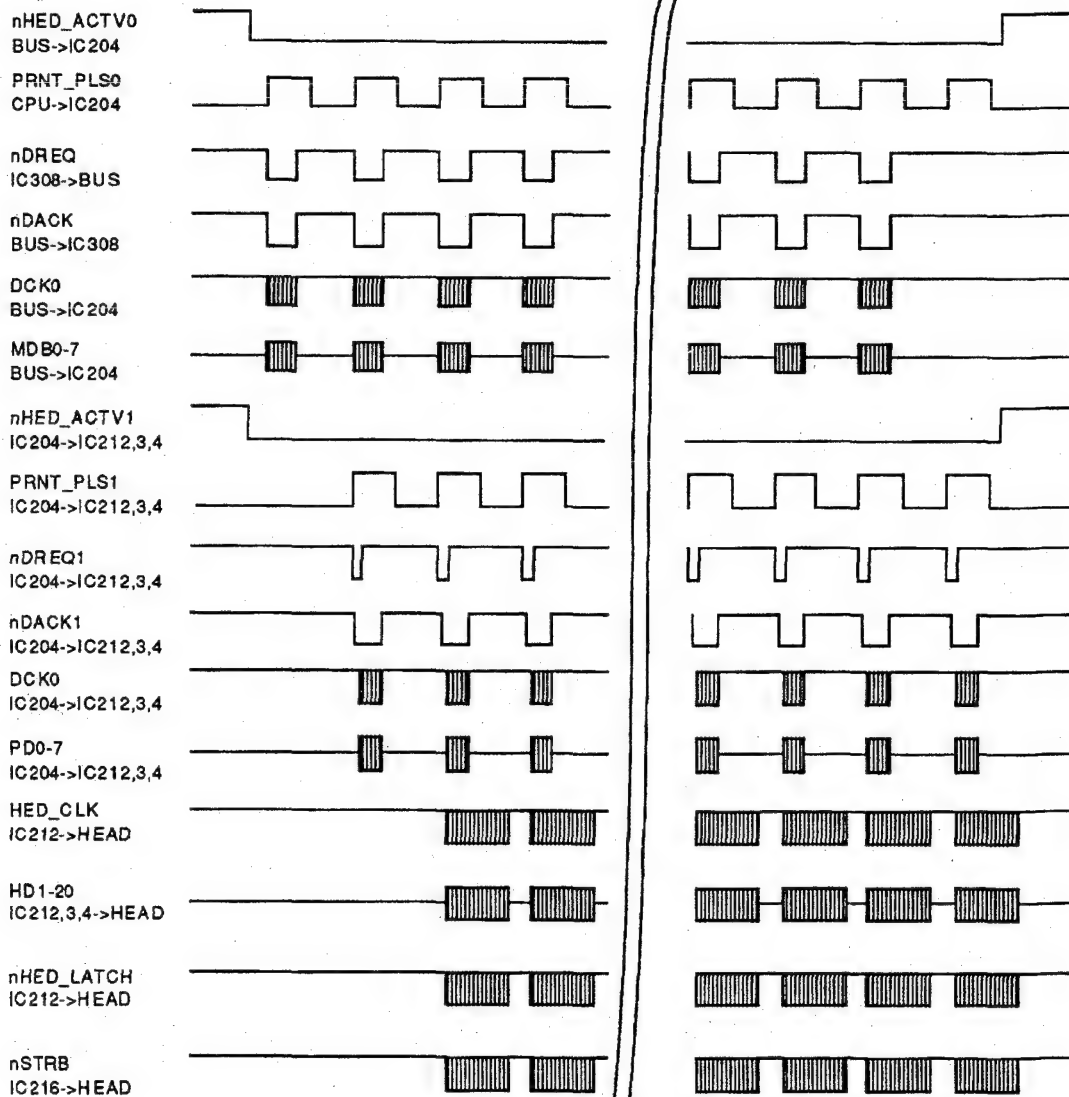
This IC corrects voltage changes of head elements that is turned on the electricity by 1 line.

Data is inputed from IC212 to 214, according to it's data quantity, width of head STROBE (CN7 25) is adjusted.

(6) Head voltage control

This unit does not need the head voltage adjustment basically. But head voltage is not always stabilized by heat store of the head or difference between printing papers. When head voltage is less than 16V or more than 23V, the head or power supply is abnormal.

(7) Head control section timing chart



8-1-4. Port Map

(1) CPU (IC101) Port map

Terminal	Signal line name	I/O	Function
1	nRESET	I	Reset of CPU
2	XTAL		Clock oscillator (20MHz)
3	EXTAL		Clock oscillator (20MHz)
4	MD1	I	Appointment of CPU operation mode
5	MD0	I	Appointment of CPU operation mode
6	nNMI	I	Non maskable interrupt
7	nSTBY	I	Stand-by
8	Vss		GND
9	nARB	I	Communication between daughter boards
10	RxD	I	Receiving data
11	TxD	O	Transmission data
12	Vss		GND
13	nWAIT	I	Wait
14	ϕ		System clock
15	nAS	O	Address strobe
16	nWR	O	Write signal
17	nRD	O	Read signal
18	nIRQ0	I	DREQ break into
19	nDREQ	I/O	Print data request
20	nDACK	I/O	Print data acknowledgment
21	KEY_EN0	O/Hi-Z	Key scan
22	KEY_EN1	O/Hi-Z	Key scan
23	KEY_DAT0	I	Key data
24	KEY_DAT1	I	Key data
25	KEY_DAT2	I	Key data
26	KEY_DAT3	I	Key data
27	RS	O	LCD
28	R_nW	O	LCD
29	AVss		Ground of A/D conversion
30	RBN_CD_SENS	I	Input of ribbon code sensor

Terminal	Signal line name	I/O	Function
31	BCD_SENS	I	Input of barcode sensor
32	OHP_SENS	I	Input of OHP sensor
33	HED_THERM	I	Thermister value of thermalhead
34	ROOM_THERM	I	Thermister value of room
35	nCTS_LATCH	I	nCTS
36	ROOM_THERM2	I	Thermister value of room
37	P77	I	
38	AVcc		Power supply of A/D conversion
39	EXTRA	I/O	
40	PRNT_PLS0	O	Print pulse
41	nHED_ACTV0	O	Head active
42	nRTS	O	Receiving possible (Low active)
43	P_TYPE0	O	Number of the identical images in one printout
44	P_TYPE1	O	Number of the identical images in one printout
45	PWM0	O	Take-up motor PWM
46	PWM	O	Supply motor PWM
47	Vcc		Power supply
48	A15	O	Address
49	A14	O	Address
50	A13	O	Address
51	A12	O	Address
52	A11	O	Address
53	A10	O	Address
54	A9	O	Address
55	A8	O	Address
56	Vss		GND
57	A7	O	Address
58	A6	O	Address
59	A5	O	Address
60	A4	O	Address

Terminal	Signal line name	I/O	Function
61	A3	O	Address
62	A2	O	Address
63	A1	O	Address
64	A0	O	Address
65	D0	I/O	Data
66	D1	I/O	Data
67	D2	I/O	Data
68	D3	I/O	Data
69	D4	I/O	Data
70	D5	I/O	Data
71	D6	I/O	Data
72	D7	I/O	Data
73	Vss		GND
74	DI	I	Control line of EEPROM
75	CLK	O	Control line of EEPROM
76	LD	O	Control line of EEPROM
77	DO	O	Control line of EEPROM
78	SDA	I/O	Control line of external A/D converter
79	SCL	O	Control line of external A/D converter
80	DCK	I/O	Printing data clock

(2) PPI (IC105) Port map

Terminal	Signal line name	I/O	Function
1	NC		
2	nCS	I	Tip select
3	GND		GND
4	A1	I	Address
5	A0	I	Address
6	B1	O	Address for changing memory bank
7	B0	O	Address for changing memory bank
8	TRNS_ENB	O	Control line for transmission in printing
9	nHOT_RESET	O	PQC IC hot reset
10	COLOR0	O	Gamma SRAM Color bit
11	COLOR1	O	Gamma SRAM Color bit
12	COLOR2	O	Gamma SRAM Color bit
13	CK_SEL	O	Head control clock select
14	SEL0	O	Daughter board select signal
15	SEL1	O	Daughter board select signal
16	SEL2	O	Daughter board select signal
17	NC		
18	nC_RESET	O	Daughter board CPU reset
19	nSTNBY	O	Daughter board CPU stand-by
20	nSTRB	O	Daughter board clock for program transmission
21	nCTS_CLR	O	nCTS_LATCH Clear
22	PB7	O	
23	Vcc		Power supply
24	D7	I	Data
25	D6	I	Data
26	D5	I	Data
27	D4	I	Data
28	D3	I	Data
29	D2	I	Data
30	D1	I	Data

Terminal	Signal line name	I/O	Function
31	D0	I	Data
32	RESET	I	Reset (High active)
33	NC		
34	NC		
35	nWR	I	Write signal
36	MDB7	I/O	Main data bus
37	MDB6	I/O	Main data bus
38	MDB5	I/O	Main data bus
39	MDB4	I/O	Main data bus
40	MDB3	I/O	Main data bus
41	MDB2	I/O	Main data bus
42	MDB1	I/O	Main data bus
43	MDB0	I/O	Main data bus
44	nRD	I	Read signal

(3) PPI (IC106) Port map

Terminal	Signal line name	I/O	Function
1	NC		
2	nCS	I	Tip select
3	GND		GND
4	A1	I	Address
5	A0	I	Address
6	nPQC_RESET	O	PQC IC reset
7	ALRM_LED	O	Alarm LED
8	FAN_MTR	O	Fan motor
9	SPLY_MTR0	O	Supply motor
10	HED_MTR0	O	Head motor
11	HED_MTR1	O	Head motor
12	TKUP_MTR0	O	Take-up motor
13	SPLY_MTR1	O	Supply motor
14	HED_HOM_SENS	I	Head home sensor
15	HED_POS_SENS	I	Head position sensor

Terminal	Signal line name	I/O	Function
16	ARM_HOM_SENS	I	Arm home sensor
17	NC		
18	ARM_POS_SENS	I	Arm position sensor
19	TKUP_FG_SENS	I	Take-up FG sensor
20	SPLY_FG_SENS	I	Supply FG sensor
21	P_EG_SENS	I	Paper edge sensor
22	RBN_CST_SENS	I	Ribbon cassette sensor
23	Vcc		Power supply
24	D7	I	Data
25	D6	I	Data
26	D5	I	Data
27	D4	I	Data
28	D3	I	Data
29	D2	I	Data
30	D1	I	Data
31	D0	I	Data
32	RESET	I	Reset (High active)
33	NC		
34	NC		
35	nWR	I	Write signal
36	ARM_MTR1	O	Feed paper lever motor
37	ARM_MTR0	O	Feed paper lever motor
38	LOAD_MTR1	O	Feed paper motor
39	LOAD_MTR0	O	Feed paper motor
40	CAP_MTR_A	O	Capstan motor
41	CAP_MTR_B	O	Capstan motor
42	CAP_MTR_nA	O	Capstan motor
43	CAP_MTR_nB	O	Capstan motor
44	nRD	I	Read signal

8-1-5. Relation of Error Indicating Each Sensor

(1) NO RIBBON

Detection sensor : Ribbon cassette sensor (photo interrupter)
Cause : Sensor does not detect ribbon cassette.
Symptom : 1. Ribbon cassette is not inserted.
2. Ribbon cassette is not inserted correctly or ribbon cassette was pulled out during printing.
3. Sensor defective
4. Mechanism section which interrupts the photo interrupter does not operate smoothly.

(2) NO PAPER

Detection sensor : Paper size sensor 0 or 2 (Photo interrupter)
Cause : Sensor does not detect printing paper.
Symptom : 1. Feed paper tray is not inserted.
2. Feed paper tray is inserted halfway.
3. No printing paper is inserted.
4. Sensor defective
5. Mechanism section which interrupts the photo interrupter does not operate smoothly.
6. Printing paper is curl largely.

(3) RIBBON & PAPER MISMATCH

Detection sensor : OHP sensor (Interruptive type) and bar-code sensor (Reflection type)
Cause : A kind of paper detected by ribbon cassette and a kind of paper detected by bar-code sensor are not coincide.
Symptom : 1. A kind of ink ribbon and a kind of printing paper are not coincide.
2. Either sensor defective
3. Threshold value defective of either sensor
4. Bar-code ring defective

(4) END OF RIBBON

Detection sensor : Take up FG sensor (Photo interrupter) and Supply FG sensor (Photo interrupter)
Cause : It was judged that ribbon is stopped by both FG sensors during beginning detection of ribbon.
Symptom : 1. Ribbon is ended.
2. Ribbon is jammed.
3. Take-up ribbon motor does not operate.
4. Sensor defective.

(5) RIBBON ERROR

Detection sensor : Take up FG sensor (Photo interrupter) and supply FG sensor (Photo interrupter)

Cause : It was judged that ribbon is stopped by both FG sensors during beginning detection of ribbon.

Symptom : 1. Ribbon is jammed.
2. Ribbon is cut at the halfway.
3. Printing paper or ribbon is stopped at the halfway.
4. Sensor defective
5. Take up ribbon motor does not operate.
6. Take up ribbon motor rotate slowly.

(6) HEAD IN COOLING/HEAD IN HEATING

Detection sensor : Head thermistor

Cause : Head temperature is less than 15°C or more than 60°C.

Symptom : 1. Head temperature is over than possible printing temperature range (15 to 60°C).
2. Head thermistor defective
3. Head harness defective

(7) HEAD CABLE NOT CONNECTED (This is not described in users manual.)

Detection sensor : Head thermistor

Cause : Head temperature is not measured.

Symptom : 1. Head thermistor defective
2. Head harness defective

(8) REMOVE PAPER AND PRESS[>]

Detection sensor : PATH 0 sensor (Photo interrupter) or paper edge sensor (Photo interrupter)

Cause : When feeding paper, paper does not come in a few seconds.

Symptom : 1. Paper is not send correctly by some reason.
2. Sensor defective. Or mechanism shutter defective.
3. Paper feed motor does not operate.

Detection sensor : PATH 1 sensor (Photo interrupter)

Cause : Capstan motor rotates abnormally during paper rewind.

Symptom : 1. Paper is unnaturally pulled by some reason during paper rewind.
2. Sensor defective
3. Capstan motor does not operate.

Detection sensor : Take up FG sensor (Photo interrupter) and supply FG sensor (Photo interrupter)

Cause : It was judged that ribbon is stopped by both FG sensors during printing.

Symptom : 1. Printing paper is stopped by some reason.
2. Abnormal occurs at ribbon.
3. Sensor defective

Detection sensor : Nothing

Cause : When turning the unit ON, it is judged that printing paper remains in the unit. (EEPROM memories that the unit is turned OFF during previous printing.)

Symptom : 1. The unit was turned OFF during previous printing.
2. EEPROM defective
3. EEPROM is not initialized.

(9) REMOVE PAPER

Detection sensor : PATH 0 sensor (Photo interrupter) or paper edge sensor (Photo interrupter)

Cause : It was judged that printing paper remains in the internal of the unit during waiting condition.

Symptom : 1. Printing paper remains in the internal of the unit.
2. Sensor defective. Or mechanism shutter defective.

(10) MECHA TROUBLE

Detection sensor : All of sensors

Cause/Symptom : The unit does not operate correctly by motor or sensor defective.

Countermeasure method : Survey the any sensor defective by using error reset menu.

SECTION 9 SERVICE MODE

9-1. SERVICE MODE

9-1-1. Construction

Service mode is composed as follows. ADJUST is added by entering the adjust mode.

- COLOR ADJUST
- THRESHOLD
- TOTAL PRINT
- ERROR CANCEL
- TEST PATTERN
- MANUAL MECHA
- ROM Ver
- PRINTER SELF CHECK
- ADJUST

9-1-2. Entering Method

The unit can be entered in service mode by turning on the power switch while [←] and [→] keys on the front panel are depressed. In service mode, ordinary operation is possible. Service mode is released by turning off the power switch.

9-1-3. Content

When entering the service mode, LCD indication becomes follows.

READY	A4	QTY	1S
-------	----	-----	----

OR
LET

In above condition, entering in menu by pressing [MENU] key.

- COLOR ADJUST (Adjustment of R, G, B, DARK, LIGHT, SHARPNESS, GAMMA)
This is as same as usuall menu content.

· THRESHOLD (Threshold level of sensor)

Threshold levels of three sensors (ribbon code, bar code, OHP) at present are appeared by pressing [→] key.

RBN	BCD	OHP
110	121	117

Check sensor level whether it is normal or abnormal by dust or something.

Numerical value of threshold.

a. Decision of threshold level

Decision of sensor H or L level is performed by judging the threshold level that is decided just before printing. When printing is ended, the threshold level that is used in next printing is decided by electric potential of this printing H, L level. First value of threshold level is decided by receiving light side when adjusting sensor luminance quantity.

b. Numerical value indication

Electric potential of sensor is obtained by 8bit A/D conversion. Threshold indication is also based by 8bit A/D conversion. Electric potential of each threshold level is obtained as follow expression.

Electric potential = $5 \times (\text{indication value} / 255)$

c. Abnormal value

In case indication value is more than 229(4.5V) or less than 25(0.5V), the value can be judged abnormal.

· TOTAL PRINT (Total printing quantity of thermal head)

When depressing [→] key, total printing quantity of thermal head is indicated.

· ERROR CANCEL (Recovery of sensor or motor trouble.)

When depressing [→] key, motor or sensor name is indicated.

HEAD MOTOR	[→]
------------	-----

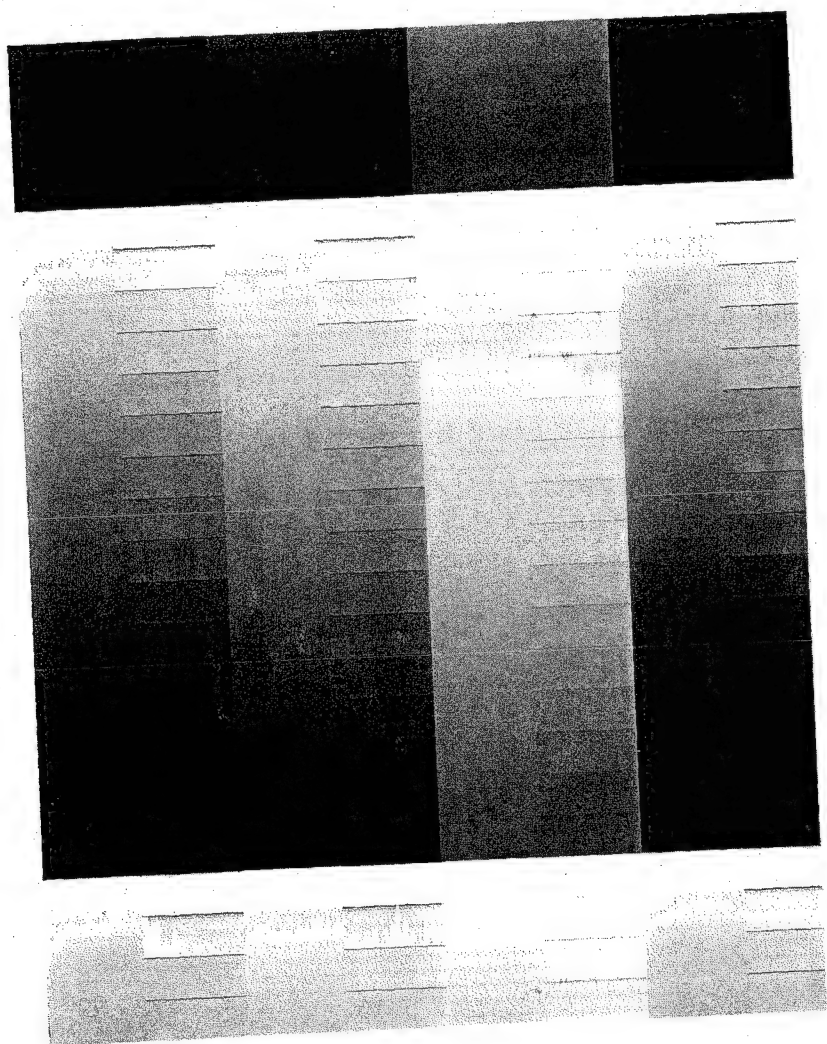
When repairing is ended, next indication is appeared by depressing [→] key.
And error condition is recovered by depressing [←] key.

CLEAR : PRESS[←]

- TEST PATTERN (TEST PATTERN PRINTING)
By depressing [→] key, indication is as follows.

COLOR STEP
PRESS[→]

By depressing [→] key, following picture is printed. Ribbon remaining quantity is not changed by this printing. Color adjustment by COLOR ADJUST is not reflected on this printing.



• MANUAL MECHA (MANUAL MECHANISM OPERATION)

When trouble portion detecting or repair completion checking or pulling out the jammed printing paper, each motor can be operated by manual operation.

[→] key is depressed and a motor is selected by depressing [↑] or [↓] key. Each motor operation is as follows.

HEAD MOTOR..... head position goes up every time the [→] key is depressed.
head position goes down every time the [←] key is depressed.

LEVER MOTOR..... feed paper arm goes up every time [→] key is depressed.
feed paper arm goes down every time [←] key is depressed.

LOAD MOTOR..... while depressing [→] key, feed paper roller rotate correctly (toward feed paper direction). while depressing [←] key, feed paper roller rotate reversely.

CAPS MOTOR..... while depressing [→] key, capstan motor rotate correctly.
while depressing [←] key, capstan motor rotate reversely.

TKUP MOTOR..... while depressing [→] key, ribbon motor (take-up side) rotates toward ribbon take-up direction. while depressing [←] key, ribbon motor rotates toward rewind direction.

SPLY MOTOR..... while depressing [→] key, ribbon motor (supply side) rotates toward ribbon rewind direction.

• ROM ver (ROM version indication)

The version of programmable ROM IC102 on SY-12 board is appeared by depressing [→] key.

• **PRINTER SELF CHECK (PRINTER SELF DIAGNOSIS FUNCTION)**

Error which is detected by diagnosis function of each board is appeared by depressing [→] key.

① **SY CHECKING**

Errors of SY-12 board, MEC-2 board, each motor and sensors are checked.

② **IF CHECKING**

Error of IF-33 board is checked.

③ **FMY CHECKING**

Error of FMY-15 board is checked.

Concrete portion and content of each error is as follows.

SY-12 BOARD SELF DIAGNOSIS ERROR MESSAGE TABLE

ERROR MESSAGE	CONTENT
HEAD HOME SENSOR ERROR	Abnormal Head Home Sensor or Abnormal Head Motor.
HEAD POSITION SENSOR ERROR	Abnormal Head Position Sensor or Abnormal Head Motor.
LEVER HOME SENSOR ERROR	Abnormal Arm Home Sensor or Abnormal Lever Motor.
LEVER POSITION SENSOR ERROR	Abnormal Arm Position Sensor or Abnormal Lever Motor.
TAKE-UP FG SENSOR ERROR	Abnormal Take-up FG Sensor or Abnormal Take-up Motor.
SUPPLY FG SENSOR ERROR	Abnormal Supply FG Sensor or Abnormal Supply Motor.
PAPER EDGE SENSOR ERROR	Abnormal Paper Edge Sensor.
PAPER SIZE 0 SENSOR ERROR	Abnormal Size 0 Sensor.
PAPER SIZE 2 SENSOR ERROR	Abnormal Size 2 Sensor.
PAPER PATH 0 SENSOR ERROR	Abnormal Pass 0 Sensor.
PAPER PATH 1 SENSOR ERROR	Abnormal Pass 1 Sensor and Abnormal Capstan Motor.
LOAD FG SENSOR ERROR	Abnormal Load FG Sensor and Abnormal Loading Motor.
RIBBON CASSETTE SENSOR ERROR	Abnormal Ribbon Cassette Sensor.
HEAD THERMISTOR SENSOR ERROR	Abnormal Head Thermistor Sensor and Abnormal Head Harness.
ROOM THERMISTOR SENSOR ERROR	Abnormal Room Thermistor Sensor.
GAMMA ERROR	Abnormal GAMMA SRAM(IC203).
VDC ERROR	Abnormal VDC(IC215).
PQC ERROR	Abnormal PQC(IC211-214).

IF-33 BOARD ERROR CORD TABLE

DIRECT DRIVE I/O CHECK	
1001	IC313[Q1 2]-IC315[D1 2]
1002	IC313[Q2 5]-IC315[D2 4]
1003	IC313[Q3 6]-IC315[D3 6]
1004	IC313[Q4 9]-IC315[D4 8]
1005	IC313[Q5 12]-IC315[D5 11]
1006	IC313[Q6 15]-IC315[D6 13]
1007	IC313[Q7 16]-IC315[D7 15]
1008	IC313[Q8 19]-IC315[D8 17]
1001-1008 all	In case, output from other board to MDB of IC313[EN 1]-, IC313[CLK 11]-, IC315[G1 1, G2 19]-, BUS.

DATA BUS SYSTEM CHECK OF BUF1	
1009	IC104[D0 11]-IC106[A0 2], IC106[B0 18]-
100A	IC104[D1 12]-IC106[A1 3], IC106[B1 17]-
100B	IC104[D2 13]-IC106[A2 4], IC106[B2 16]-
100C	IC104[D3 15]-IC106[A3 5], IC106[B3 15]-
100D	IC104[D4 16]-IC106[A4 6], IC106[B4 14]-
100E	IC104[D5 17]-IC106[A5 7], IC106[B5 13]-
100F	IC104[D6 18]-IC106[A6 8], IC106[B6 12]-
1010	IC104[D7 19]-IC106[A7 9], IC106[B7 11]-
109-1010	In case, output from other board to DKC of IC106[DIR 1]-, IC104[WR 27]-, IC104[OE 22]-, BUS.

ADDRESS CHECK OF BUF1	
1011	IC104[A0 10]-IC100[QA 14], IC104[A1 9]-IC100[QB 13]
1012	IC104[A1 9]-IC100[QB 13]
1011-1012, 1013	IC104[A2 8]-IC100[QC 12]
1011-1013, 1014	IC104[A3 7]-IC100[QD 11]
1011-1014, 1015	IC104[A4 6]-IC101[QA 14]
1011-1015, 1016	IC104[A5 5]-IC101[QB 13]
1011-1016, 1017	IC104[A6 4]-IC101[QC 12]
1011-1017, 1018	IC104[A7 3]-IC101[QD 11]
1011-1018, 1019	IC104[A8 25]-IC102[QA 14]
1011-1019, 101A	IC104[A9 24]-IC102[QB 13]
1011-101A, 101B	IC104[A10 21]-IC102[QC 12]
1011-101B, 101C	IC104[A11 23]-IC102[QD 11]
1011-101C, 101D	IC104[A12 2]-IC103[QA 14]
1011-101D	IC100, 101, 102, 103[CLK 2]-, [CLR 1]-

COLOR CHECK OF BUF1	
101E	IC104[A13 26]-, [A14 1]-

DATA BUS SYSTEM CHECK OF BUF2	
101F	IC204[D0 11]-IC205[A0 2], IC205[BO 18]-
1020	IC204[D1 12]-IC205[A1 3], IC205[B1 17]-
1021	IC204[D2 13]-IC205[A2 4], IC205[B2 16]-
1022	IC204[D3 15]-IC205[A3 5], IC205[B3 15]-
1023	IC204[D4 16]-IC205[A4 6], IC205[B4 14]-
1024	IC204[D5 17]-IC205[A5 7], IC205[B5 13]-
1025	IC204[D6 18]-IC205[A6 8], IC205[B6 12]-
1026	IC204[D7 19]-IC205[A7 9], IC205[B7 11]-
101F-1026	IC205[DIR 1]-, IC204[WR 27]-, IC204[OE22]-

ADDRESS SYSTEM CHECK OF BUF2	
1027	IC204[A0 10]-IC200[QA 14], IC204[A1 9]-IC200[QB 13]
1028	IC204[A1 9]-IC200[QB 13]
1027-1028,1029	IC204[A2 8]-IC200[QC 12]
1027-1029,102A	IC204[A3 7]-IC200[QD 11]
1027-102A,102B	IC204[A4 6]-IC201[QA 14]
1027-102B,102C	IC204[A5 5]-IC201[QB 13]
1027-102C,102D	IC204[A6 4]-IC201[QC 12]
1027-102D,102E	IC204[A7 3]-IC201[QD 11]
1027-102E,102F	IC204[A8 25]-IC202[QA 14]
1027-102F,1030	IC204[A9 24]-IC202[QB 13]
1027-1030,1031	IC204[A10 21]-IC202[QC 12]
1027-1031,1032	IC204[A11 23]-IC202[QD 11]
1027-1032,1033	IC204[A12 2]-IC203[QA 14]
1027-1033	IC200, 201, 202, 203[CLK 2]-, [CLR 1]-

COLOR CHECK OF BUF2	
1034	IC204[A13 26]-, [A14 1]-

CHECK OF BUF	
1035	IC501, IC502[A/B 1]-, IC503[1A 2], [2B 6]-, IC310[13]-, IC308[1, 5]-, of BUF signal system.

CHECK OF DCK GENERATION PORTION	
1036	IC402[8~13]-, IC403[1~6]-, IC306[1~3]-, IC303[1~3]-, IC300[FTCI57, FTOA58, P62 59, P63 60]-
1037	IC402[8~13]-, IC403[1~6]-, IC306[1~3]-, IC300[FTCI57, FTOA58, P62 59]-

FMY-15 BOARD SELF DIAGNOSIS ERROR MESSAGE TABLE

ERROR CODE	CONTENT
2001	Poor condition of data bus RDD0 to 3, GDD0 to 3, BDD0 to 3 or RAS or CAS between IC200 and D-RAM (IC201 to IC205, and IC211 to IC215, IC221 to IC225 on ME-6 board).
2002	Poor condition of address bus AA0 to 11 or RAS or CAS0 between IC200 and D-RAM (IC201 to IC205, and IC211 to IC215, IC221 to IC225 on ME-6 board). Or poor condition of D-RAM or IC200.
2003	Poor condition of data bus RD0 to 7, GD0 to 7, BD0 to 7 between IC106, 107, 108 and IC200. Or poor condition of data bus RY0 to 7, GY0 to 7, BY0 to 7 between IC102 and IC200. Or poor condition of D-RAM or IC200 or IC132 peripheral.
2004	Poor condition of data bus RD0 to 7, GD0 to 7, BD0 to 7 between IC106, 107, 108 and IC200. Or poor condition of data bus RY0 to 7, GY0 to 7, BY0 to 7 between D-RAM and IC102 . Or poor condition of D-RAM or IC200 or IC106, 107, and IC108 peripheral.
2005	Poor condition of data bus MAIN0 to 7 between IC102 and IC104. Or poor condition of data bus D0 to 7 between IC104 and IC105. Or poor condition of IC102 or IC104 or IC105 or IC200.
2006	Poor condition of D-RAM (IC201 to IC205, IC211 to IC215, IC221 to IC225 ME-6 board).

9-2. ADJUST MODE

9-2-1. Construction

ADJUST MODE is added ADJUST item to menu of service mode. ADJUST is constructed as follows.

- ADJUST LETTER/4A
 VOLT
 BCD D/A
 RIBBON D/A
 OHP D/A

9-2-2. Entering Method

READY	A4	QTY	1S
OR			
LET			

While ready condition of service mode (above indication), Setting mode is entered by depressing [↑] key, [←] key [→] key and [↓] key in order.

In ADJUST MODE, usual operation is possible. ADJUST MODE is released by turning off the power switch.

9-2-3. Content

Entering in ADJUST MODE, LCD indication is as follows.

READY	A4	QTY	1A
-------	----	-----	----

OR
LET

In this condition, Depressing [MENU] key is entered in menu. Setting items are as follows.

- LETTER/A4 (Selection of letter or A4 paper)
Selection paper size by depressing [←] or [→] key.
- VOLT (Fine adjustment of head voltage)
LCD indication is as follows.

VOLT=17.7[+0.0] R=4257(ohm) ↓

Number at left side of voltage value is the head voltage value that is calculated from average resistance value of the head that is built the unit. (Head temperature 35°C, starting point when printing the ordinary paper.) If the most density is not obtained at this voltage, fine adjustment should be performed by depressing [←] or [→] key. Fine adjustment voltage is indicated at inside of [] of right side.

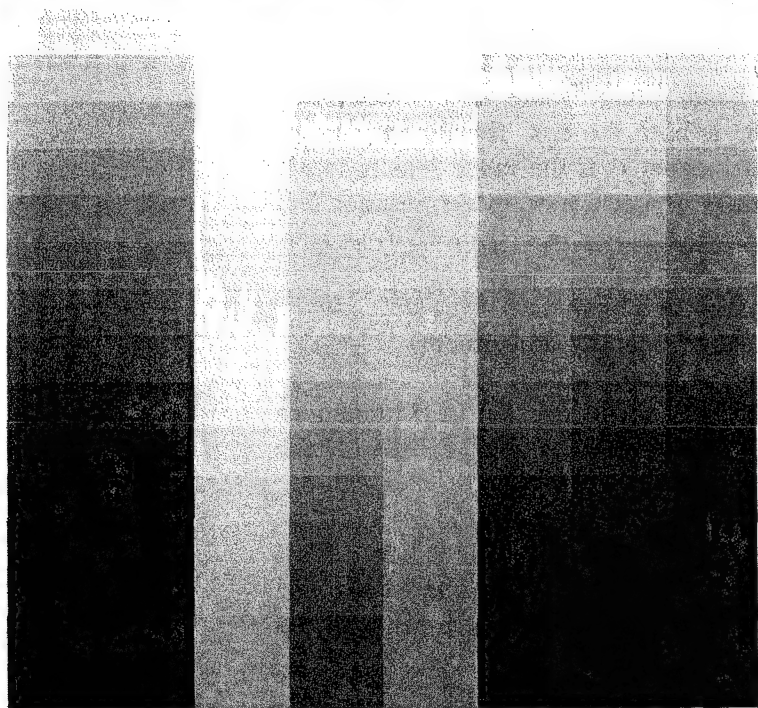
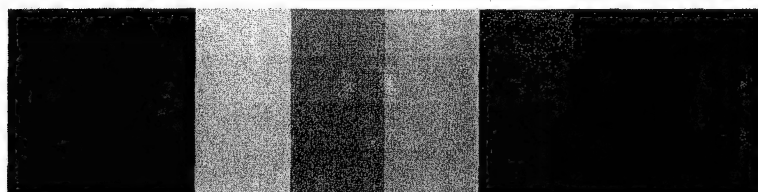
- BCD D/A (Bar code sensor luminance quantity adjustment)
- RIBBON D/A (Ribbon code sensor luminance quantity adjustment)
- OHP D/A (OHP sensor luminance quantity adjustment)
Bar code, ribbon code and OHP sensors are adjusted the most LED luminance quantity by D/A converter. When replacing each sensor or EEPROM, the adjustment is needed.
- BCD D/A
Ribbon cassette is inserted and it is adjusted by depressing [→] key. This adjustment is needed two or three times repeatly to obtain the most suitable value. In case readjustment is needed, following indication is appeared, it is adjusted by depressing [→] key again.

BCD D/A SENSOR ERROR

- RIBBON D/A
Ribbon cassette should be set to see the cyan portion. And cassette is inserted to the unit. It is adjusted by depressing [→] key.
- OHP D/A
Ensure that printing papers are not entered into the unit. It is adjusted by depressing [→] key.

9-3. FMY PRINTING

Test pattern printing is also performed in ordinary mode by operating front key only. Color steps is written in memory by depressing both [STOP] and [MENU] keys simultaneously. After that print is performed by depressing PRINT key. It is different from test pattern in service mode, print is performed through FMY-15 board. But, adjustment of COLOR ADJUST is not reflected. And ribbon remaining quantity is changed by this printing.



9-4. RESET OF EACH KIND ESTABLISHMENT VALUE

All kind establishment values are kept at EEPROM. If it is necessary, all kind establishment values can be reset to first value.

① Reset of EEPROM

Perform this reset when replacing EEPROM or MEC-2 board (has EEPROM)

Entering Method..... After entering service mode, while [STOP] key is depressed, [↑] and [↓] keys should be depressed in the ready condition of service mode (following picture) in order.

READY	A4	QTY	1S
-------	----	-----	----

OR
LET

Content..... following values are returned to first value.

user establishment value:

each value of COLOR ADJUST

printer condition:

ribbon remaining, each error information, TOTAL PRINT quantity, threshold value of sensor

setting value:

paper size, head voltage value, luminance quantity of sensor

② Reset when shipping product

User establishment value, TOTAL PRINT, ribbon remaining quantity are changed.

Entering Method..... After removing a ribbon cassette and a feed tray, while depressing [PRINT], [STOP], and [MENU] keys simultaneously, POWER switch should be turned on.

Content..... Thermal head position should be set to 1. Following values (they are not adjusted when shipping) are returned to first value.

user establishment value:

each value of COLOR ADJUST

printer condition:

ribbon remaining quantity, each error information TOTAL PRINT.

③ TOTAL PRINT reset

Total printing quantity of thermal head is returned to 0. When replacing thermal head, this reset should be performed.

Entering Method..... Total printing quantity is indicated from TOTAL PRINT item in service mode.

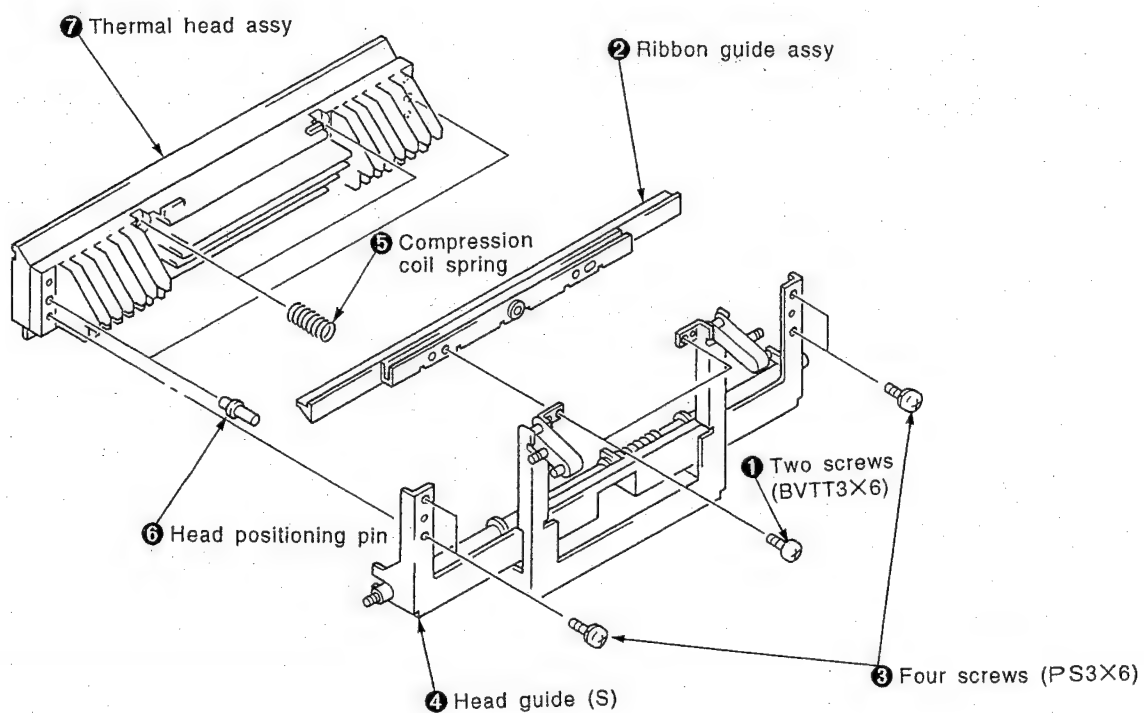
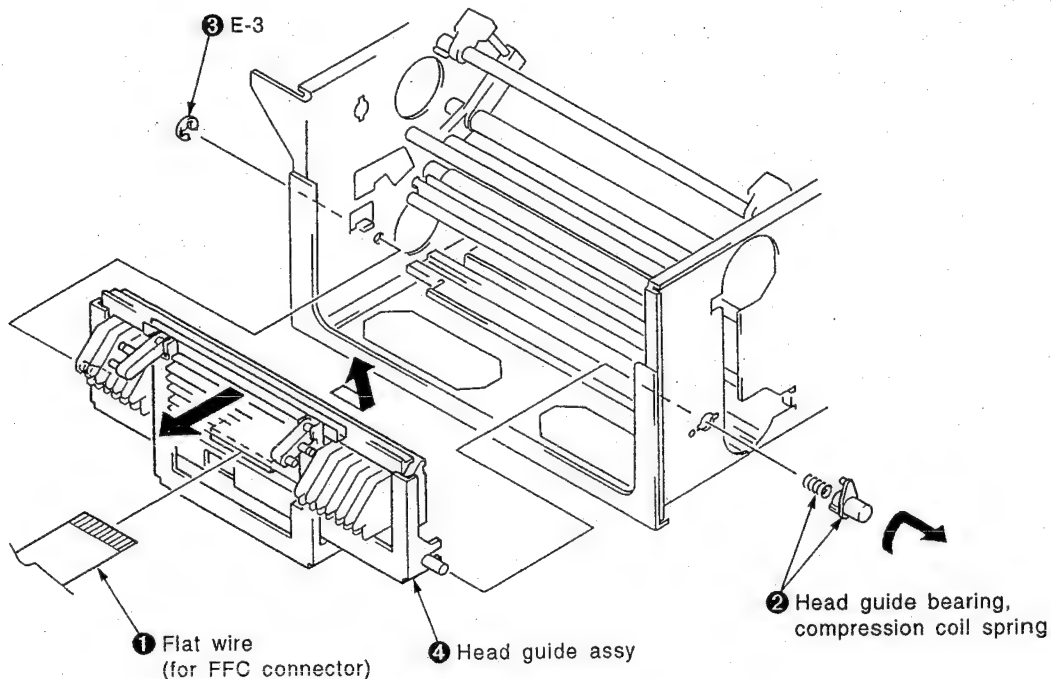
TOTAL=10057

After that, [↑], [↓] and [PRINT QTY] keys should be depressed simultaneously.

9-5. PROCESS ORDER WHEN REPLACING EACH PART

9-5-1. When Thermal Head Replacing

① Replacing order



② Resistance value data ROM replacement

This unit has a resistance value data ROM against the each thermal head. After thermal head replacement, IC209 on the SY-12 board should be changed to new ROM attached.

③ TOTAL PRINT Reset

According to the Item 4, TOTAL PRINT quantity should be reset.

④ Printing check

Entering in service mode, test pattern printing is performed. Ensure the following items.

- Is density of each steps the most suitable?
If density is not suitable, entering the setting mode, head voltage should be finely adjusted.
- Is there unevenness density toward the thermal head element?
Resistance value data ROM should be inserted. Attachment of the thermal head should be checked.

9-5-2. When Replacing EEPROM or MEC-2 Board

When replacing EEPROM or MEC-2 board (that has EEPROM), content of EEPROM is indefinite value. Each kind establishment value needed to return at first valve. Adjustments should be needed.

① EEPROM reset

Entering in service mode, EEPROM reset should be performed.

② Adjustments

Entering in setting mode, establishment of letter or A4 size luminance quantity adjustment of three kind of sensors should be performed.

③ Test pattern printing

④ Thermal head fine adjustment

Density of print paper of item ③ should be checked, if necessary, thermal head voltage fine adjustment should be performed.

9-5-3. When Replacing Bar Code, Ribbon Code and OHP Sensors

Entering setting mode, luminance quantity adjustment of sensor replaced should be performed.

9-6. NOTE ON THE UNIT TRANSPORTATION

After repairing operation, following processes should be performed not to damage the unit by vibration while its transportation.

- ① Ribbon cassette and feed tray should be removed from the unit.
- ② Entering the service mode, thermal head position should be placed at 1.
- ③ Power switch should be turned off.

SECTION 10 TROUBLE SHOOTING

10-1. MECHANICAL SECTION

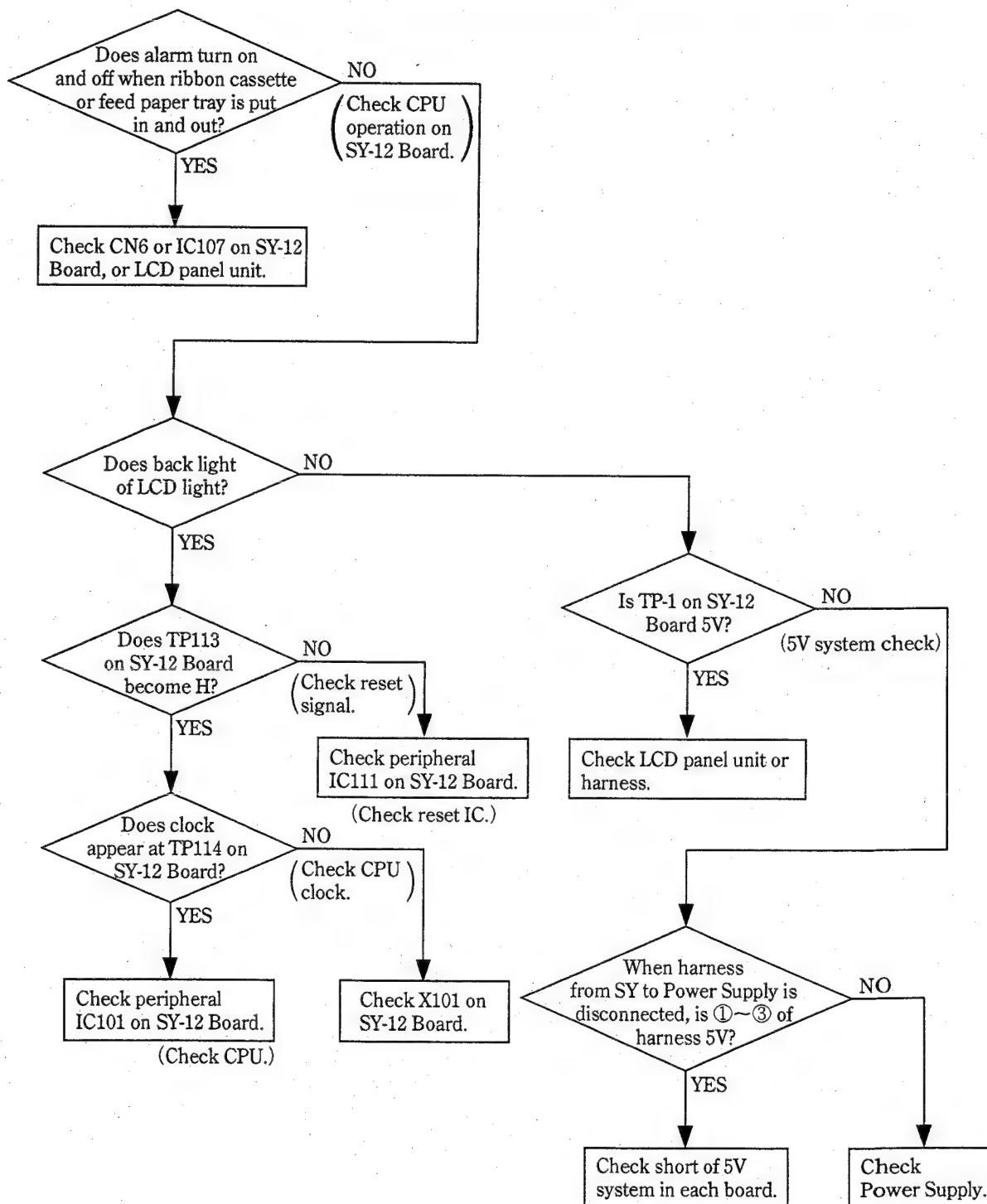
Trouble	Cause	Countermeasure
Feed paper tray is not pulled out.	1 : Printing paper is out of tray. 2 : Push ratch defective. 3 : Feed lever is not returned and is upped.	1 : Remove delivery tray, return the printing paper to the feed paper tray. 2 : Replace the push ratch. 3 : If feed lever drive cam is transformed, replace it. 3 : If feed lever drive cam is bent, replace the mechanism deck.
Ribbon cassette is not pulled out.	1 : Ribbon is removed from ribbon holder. 2 : Head is not upped to the home position.	1 : Set the ribbon to the ribbon holder correctly. 1 : If the ribbon holder is defective, replace the ribbon holder. 2 : If head drive arm is removed, assemble it correctly. 2 : If head drive arm is damaged, replace the head drive axis ass'y.
Printing paper is not out from the tray.	1 : Pick up roller is slipped. 2 : Printing paper curls. 3 : Feed lever is not upped.	1 : Replace the pick-up roller. 2 : Replace the printing paper. 3 : Replace the feed lever ass'y.
Printing papers are sent more than two sheets.	1 : Limiter defective. 2 : Separation roller is slipped. 3 : Printing paper is stuck on somewhere.	1 : Replace the limiter. 2 : Replace the separation roller. 3 : Replace the printing paper.
Printing paper is sent slantly.	1 : Paper guide (S) of feed tray is bent. 2 : Roller is slipped. 3 : Edge sensor defective.	1 : Replace the paper guide (S). 2 : If the pick-up roller is slipped, replace it. 2 : If the feed paper roller is slipped, replace it. 2 : If the separation roller is slipped, replace it. 3 : Correct the edge sensor attached portion of delivery guide (B). 3 : Replace the edge sensor. 3 : Replace the delivery guide (B).
Printing paper is stopped at the halfway of paper feeding.	1 : Head is not upped at correctly position. 2 : Ribbon is not moved. 3 : Printing paper curls. 4 : PATH 0 sensor defective. 5 : Edge sensor defective. 6 : Printing paper is caught up to harness.	1 : If the head drive arm is removed, assemble it correctly. 1 : If the head drive arm is damaged, replace the head drive axis ass'y. 1 : Replace the take up motor. 2 : Replace the take up motor. 3 : Replace the printing paper. 4 : Replace the PATH 0 sensor. 5 : Replace the edge sensor. 6 : Dress the harness correctly.
When feeding the paper, printing paper is bent.	1 : Printing paper curls.	1 : Replace the printing paper.
Printing paper is stopped at halfway of printing.	1 : Ribbon is rolled up. 2 : Ribbon is stuck on.	1 : Replace the take up motor. 2 : Replace the SY board.

Trouble	Cause	Countermeasure
Printing paper is stopped at halfway of rewinding paper.	1 : Color is not registered. 2 : Printing paper is shorter than ordinary paper. 3 : Ribbon is stuck on printing paper 4 : Printing paper is stuck on feed paper guide. 5 : Size sensor defective. 6 : Setting of letter and A4 size is difference.	1 : Refer to "Misregistration color in print". 2 : Replace the printing paper. 3 : Replace the take up motor. 3 : Replace the supply motor. 3 : Replace the SY board. 4 : Replace the feed paper guide. 5 : Replace the size sensor. 6 : Reset the paper size.
When delivering the paper, printing paper is stopped.	1 : Ribbon is stuck on the paper. 2 : Printing papers heaps at delivery exit.	1 : Replace the take up motor. 1 : Replace the supply motor. 1 : Replace the SY board. 2 : Remove the printing paper.
Ribbon is rolled up.	1 : Take up motor defective.	1 : Replace the take up motor.
Improper head contact.	1 : Defective of head attachment. 2 : Platen defective. 3 : Head drive arm defective. 4 : Head guide (S) defective. 5 : Heat sink defective.	1 : Head should be attached correctly. 2 : Replace the platen. 3 : If the head drive arm is removed, assembly it correctly. 3 : If the head drive arm is damaged, replace the head drive axis ass'y. 4 : Replace the head guide (S). 5 : Replace the heat sink.
Unevenness color in print.	1 : Platen defective.	1 : Replace the platen.
Horizontal toward unevenness density in print.	1 : Head defective.	1 : Replace the head.
Horizontal line in print.	1 : Dust is attached to the head. 2 : Head defective.	1 : Clean the head with a soft cloth dampened with ethyl alcohol. 2 : Replace the head.
Vertical line in print.	1 : Ribbon is slipped. 2 : Pulley or gear defective. 3 : Supply motor defective.	1 : Replace the ribbon. 2 : Replace the pulley or gear. 3 : Replace the supply motor.
Misregistration color in print.	1 : Ribbon tension setting is not correctly. 2 : Take up motor defective. 3 : Supply motor defective. 4 : Grease of take up side worm gear is short. 5 : Paper is sent slantly. 6 : Edge sensor defective. 7 : Rubber of capstan is clogged. 8 : Ribbon defective.	1 : The tension should be set correctly. 2 : Replace the take up motor. 3 : Replace the supply motor. 4 : Supply the grease. 5 : Refer to "Printing paper is sent slantly". 6 : Correct the edge sensor attached portion of delivery guide (B). 6 : Replace the delivery guide (B). 7 : Clean the capstan. 8 : Replace the ribbon.
Frill in print.	1 : Ribbon tension setting is not correctly. 2 : Ribbon defective.	1 : The tension should be correctly. 2 : Replace the ribbon.

10-2. ELECTRICAL SECTION

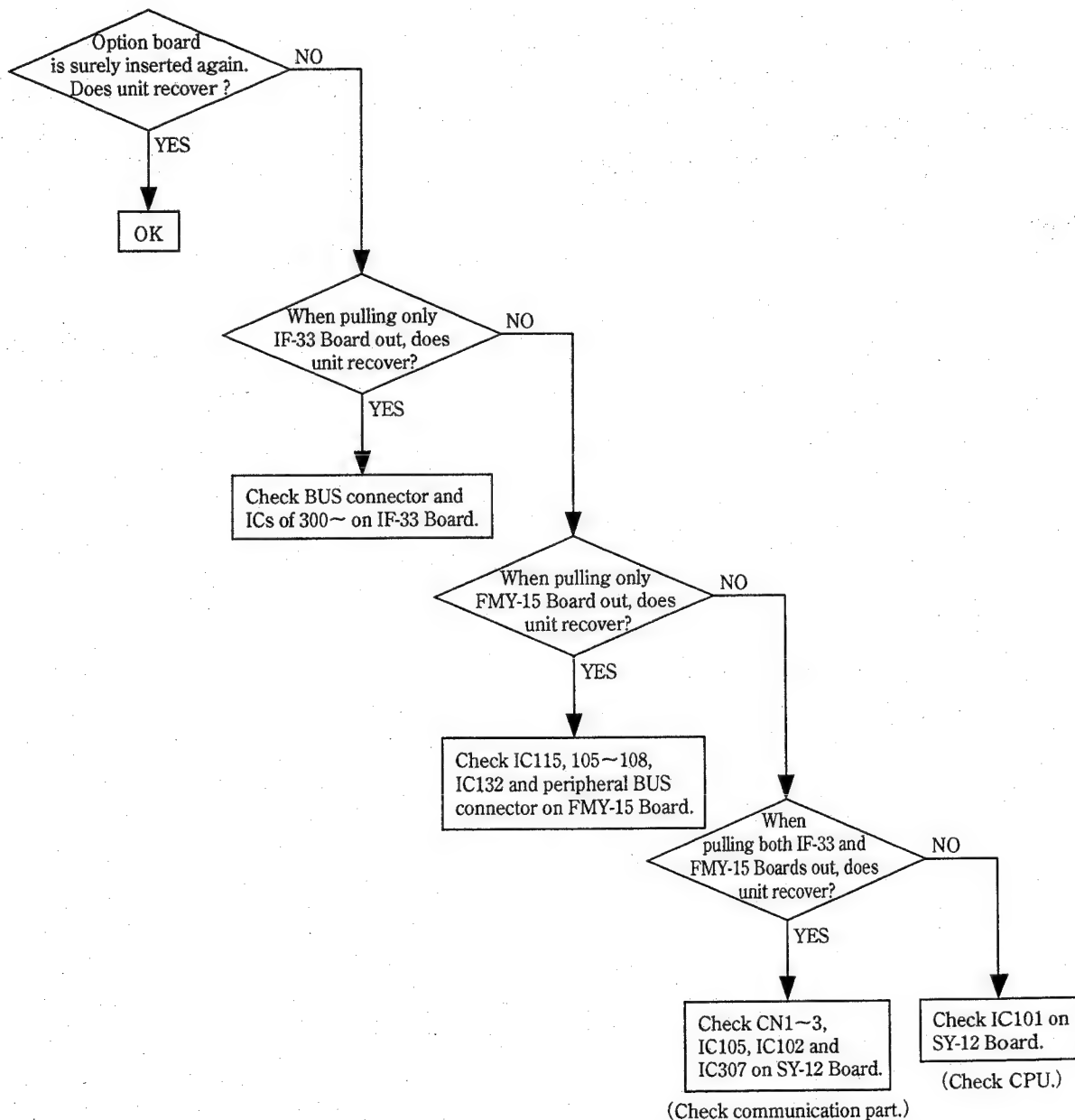
- The unit has self diagnosis function. If the unit can be entered in service mode, perform self diagnosis (See service mode.)
 - If error indicating is appeared, See SY-12 and MEC-2 boards circuit operation description.
1. When turning on power switch and establishing modes.
 - 1) After power switch is turned ON, the indication is not appeared in the liquid crystal.
 - 2) Liquid crystal indication "DIGITAL COLOR PRINTER UP-D8800" are not changed.
 2. When connecting with computer.
 - 1) The unit is not recognized the MAC.
 - 2) Only poor print from MAC (Test pattern print is normal.)
 3. When printing
 - 1) Printing operation is done, but nothing is printed.
 - 2) Misregistration of print.
 - 3) There is a horizontal white line and data failure.

After power switch is turned ON, the indication is not appeared in the liquid crystal.



Liquid crystal indication is not changed.

DIGITAL COLOR
PRINTER UP-D8800



The unit is not recognized the MAC.

Check S300, peripheral IC301 and peripheral IC400~ on IF-33 board.

Poor print only from MAC (Test pattern print is normal.)

Check on IF-33 Board. IC400 ④~⑤④

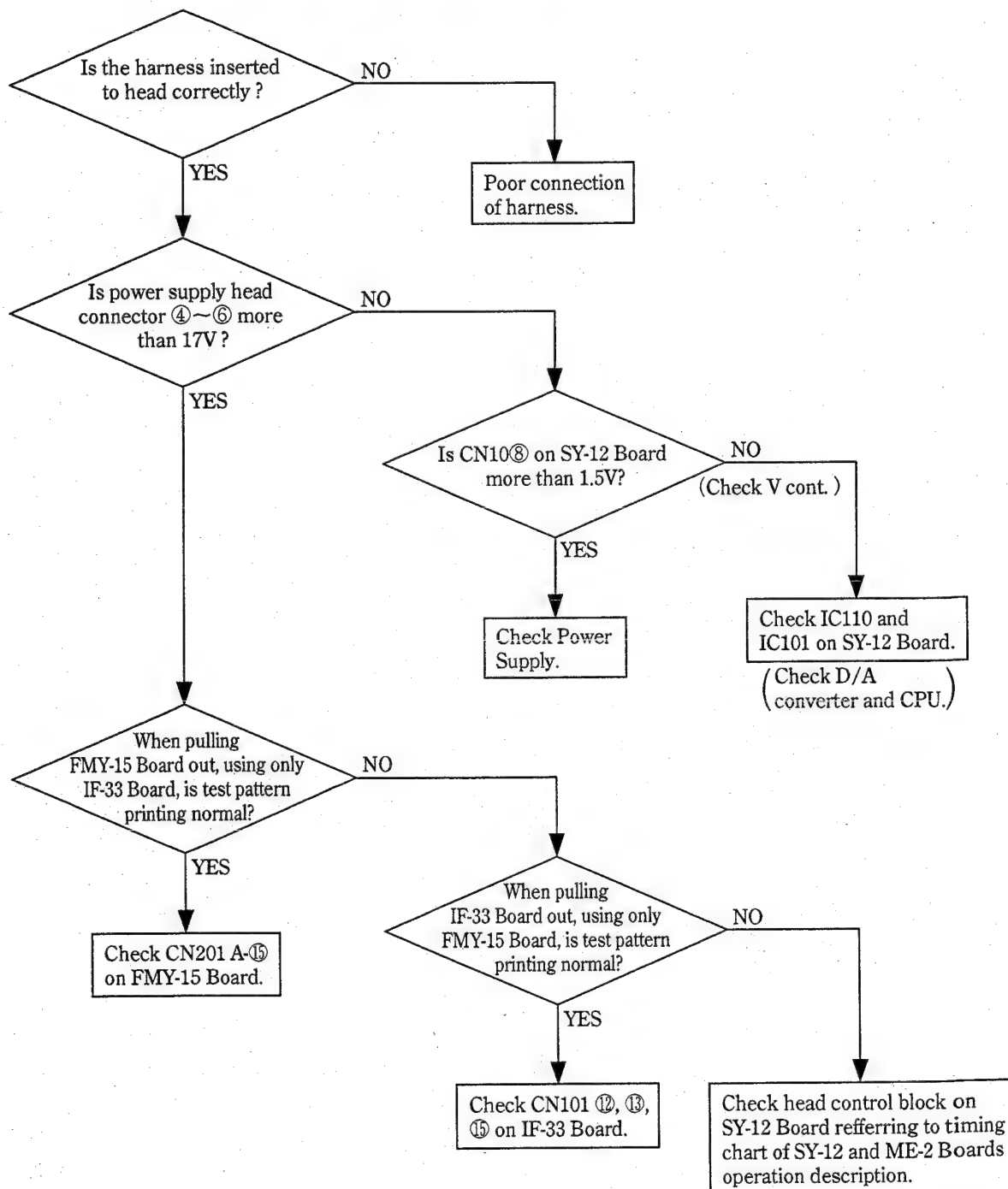
IC105 ①~⑨, ⑩

IC206 ①~⑨, ⑩

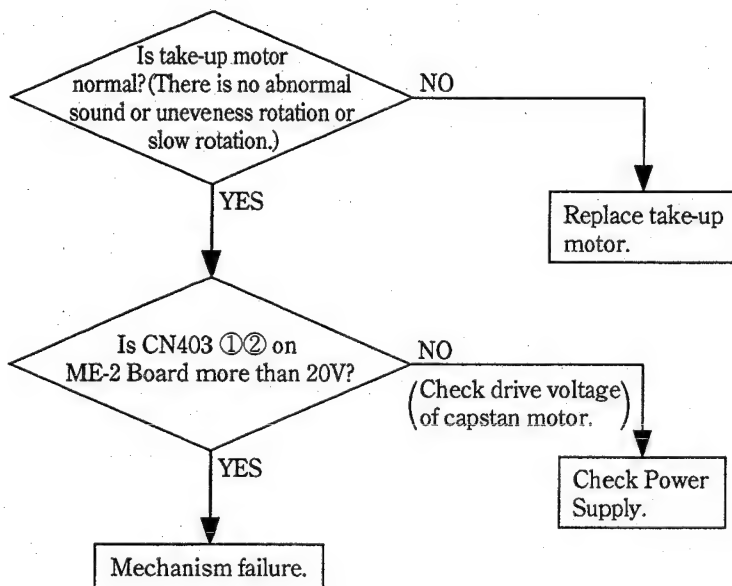
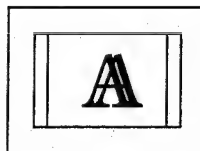
IC401

IC402 ①~⑥

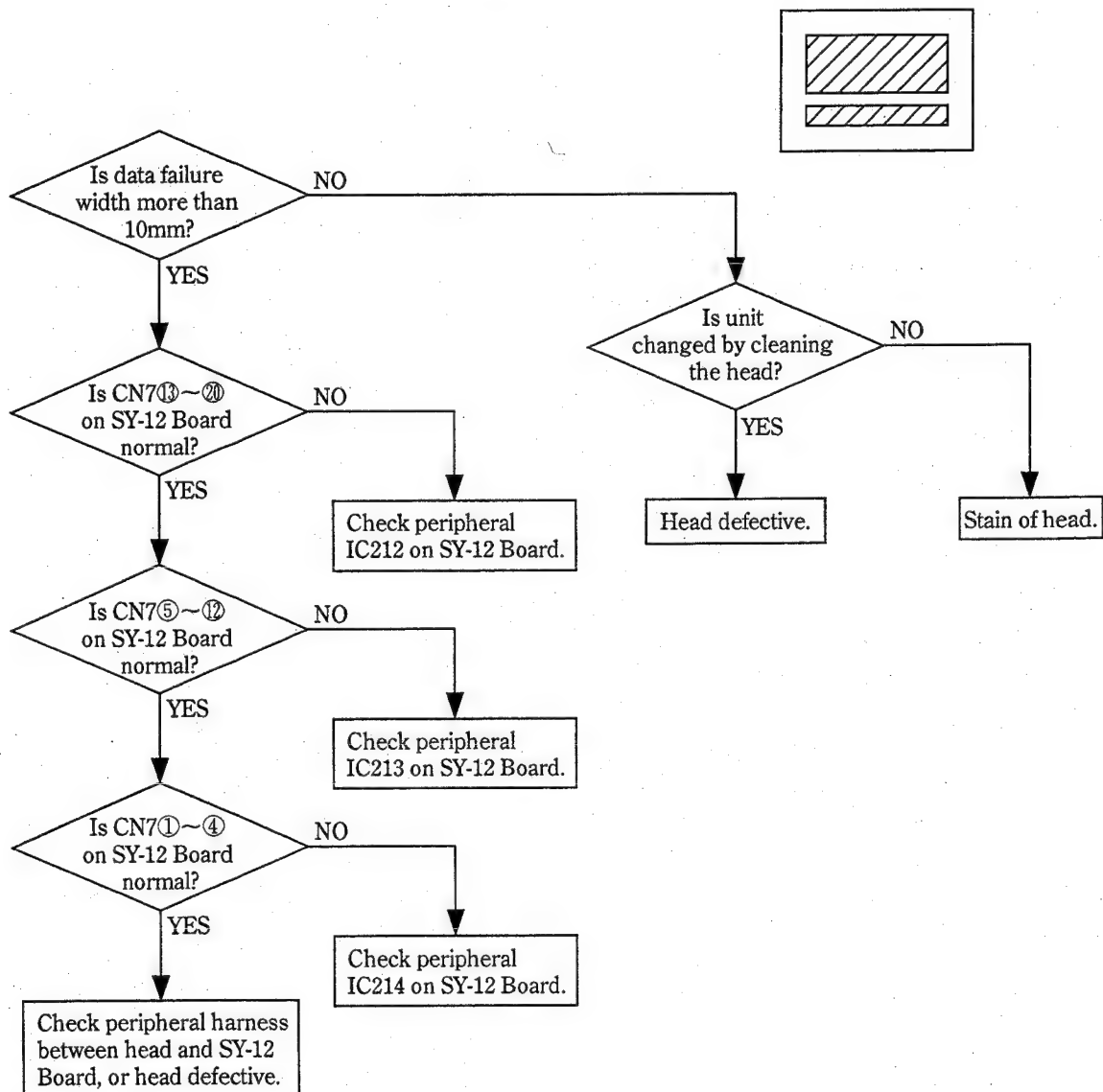
Printing operation is done, but nothing is printed.



Misregistration of print.



There is a horizontal white line and data failure.

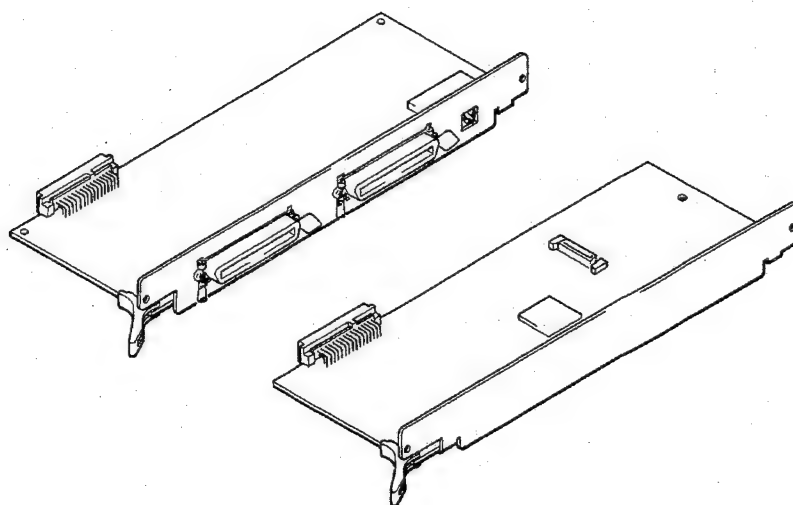


SONY®


SCSI INTERFACE KIT

UPK-8800SC

SERVICE MANUAL



SAFETY RELATED COMPONENT WARNING

Components identified by shading and  marked on the schematic diagrams and parts list are critical to safe operation. Replace these components with SONY parts whose part numbers appear as shown in this manual or in supplements published by SONY.

SECTION 1 GENERAL

This section is extracted
from instruction manual.

1-1. SPECIFICATIONS

Memory capacity	10 Mbytes 4,096 x 2,560 x 8 bits
Digital interface	SCSI-1 channel Amphenol 50-pin connector x 2
Accessories	SCSI interface board (1) Memory board (1) Screws (4) Double-density floppy diskette (3) High-density floppy diskette (3) User registration card (1) Software license agreement (1) Instructions for Use (1)

Design and specifications are subject to change without notice.

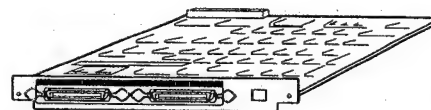
1-2. ABOUT THE SCSI INTERFACE KIT

The UPK-8800SC SCSI Interface Kit consists of the hardware and software necessary to connect and use the UP-D8800 digital color printer with your computer, via the computer's SCSI bus. Using this kit allows you to print documents from your application software on the UP-D8800. The kit includes the following:

- SCSI Interface Board for the UP-D8800 printer
- Memory Board for the UP-D8800 printer
- Printer driver software for using the UP-D8800 with Macintosh computers
- Printer driver software for using the UP-D8800 with Windows 3.1
- Photoshop plug-in software modules for using the UP-D8800 with Photoshop (for Macintosh and Windows).

1-3. KIT CONTENTS

Please confirm that your kit contains all of the following items:



• SCSI Interface Board



• Memory Board

- Four mounting screws
- Three 2DD floppy disks (Windows software)
- Three 2HD floppy disks (Macintosh software)
- User registration card
- Software license agreement

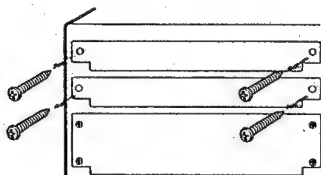
1-4. INSTALLING THE BOARDS

Perform the following steps to install the SCSI Interface Board and the Memory Board in the expansion slots in the back of the UP-D8800.

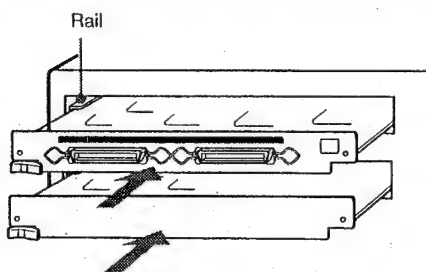
Note:

Be sure to unplug the UP-D8800 from the AC mains before beginning the installation.

- 1 Remove the screws from both sides of the UP-D8800 expansion slot covers and remove the slot covers.



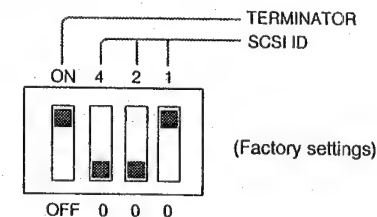
- 2 Fit the SCSI Interface Board and the Memory Board into the card edge rails and slide the boards all the way into the UP-D8800.



- 3 Fasten each board in place using the screws provided with the kit.

1-5. SETTING THE DIP SWITCH

The DIP switches on the panel of the SCSI Interface Board determine the on/off state of the internal SCSI bus terminator and the SCSI device ID number. As shipped from the factory, the DIP switches are set up as follows:



Terminator ON/OFF setting

If the SCSI Interface Board is located at the physical end of the SCSI bus, this switch should be set to ON. Otherwise, if another device is at the end of the bus, this switch should be OFF.

Switch	ON	OFF
Terminator	The internal terminator is ON.	The internal terminator is OFF.

SCSI ID Setting

The SCSI ID selection must be different from any other device on the bus. If two SCSI devices have the same ID, a malfunction will occur.

SCSI ID	SCSI ID Switch		
	4	2	1
0	0	0	0
1	0	0	1
2	0	2	0
3	0	2	1
4	4	0	0
5	4	0	1
6	4	2	0
7	4	2	1

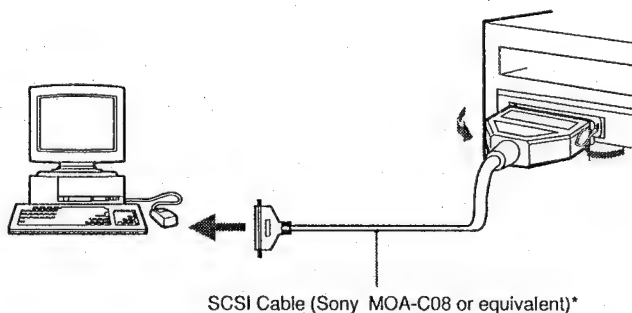
(Factory settings)

1-6. CONNECTING THE COMPUTER

The UP-D8800 connects to your computer's SCSI peripheral interface bus.

Note:

- Before connecting the SCSI cable, make sure to turn off the power switches on your computer and any peripheral equipment.
- Grasp the connector at the end of the SCSI cable, and firmly insert it into the socket.
- The total length of the SCSI cabling used with a single-host computer should be less than 6 meters.



*** Note:**

SCSI cable connection requirements can vary between different computers and peripherals. For the details of your installation, please refer to the manuals for your computer and peripherals.
When connecting the printer to Apple Macintosh II series computers, use the M0206 Apple SCSI cable or equivalent.

Switching Power On

You should switch on all peripheral devices before turning on your computer. Particularly, make sure that all SCSI peripherals are switched on first.

1-7. BEFORE USING THE MACINTOSH SOFTWARE System Environment

The Chooser Level Driver and Photoshop plug-in module require a Macintosh equipped as follows:

- The Macintosh must be able to support 32-bit Color QuickDraw
- At least 8 Mbytes of free memory
- At least 30 MBytes free space on the hard drive
- Macintosh System 7.1 or later.

The speed of the driver depends on the amount of available memory, so the more memory you have available when you print, the better the printer driver will perform.

- * If the Add-on Memory Kit UPK-8801 is not used, better driver performance can be obtained by reserving at least 20 MBytes of free space in the disk that the Photoshop plug-in folder resides.

1-8. CHOOSER LEVEL DRIVER

The Chooser Level Driver allows application software to print to the UP-D8800 using the standard printing functions of the application.

Installing the Chooser Level Driver

The following procedure describes installation of the Chooser Level Driver.

- 1 Insert the supplied floppy disk labeled "Macintosh Chooser Level Driver DISK 1" into the floppy disk drive of the Macintosh.
- 2 Double click the disk icon to open the drive window.
- 3 Double click the "Japanese" folder if you will be printing in Japanese, or the "English" folder if you will be printing in English.
- 4 Drag the UP-D8800 icon to the System Folder (this file installs itself in the Extensions folder).
- 5 If you plan to do background printing, copy the UP-D8800.Background file to the hard disk (it is not necessary to put it in the System Folder).
- 6 Insert the supplied floppy disk labeled "Macintosh Chooser Level Driver DISK 2" into the floppy disk drive of the Macintosh.
- 7 Double click the disk icon to open the drive window.
- 8 Drag the UP-D8800.ColorTable icon to the System Folder.

Printing

■ Selecting the UP-D8800

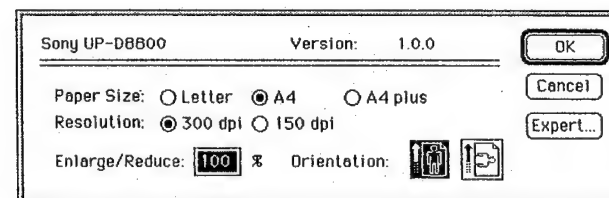
The first time you print with the UP-D8800 you need to use the Chooser, but afterwards the UP-D8800 will be selected automatically, unless you choose another printer.

- 1 From the Apple menu, select "Chooser".
The Chooser window is displayed.
- 2 Select the UP-D8800 icon displayed in the frame at the left side of the window.
The UP-D8800 name is displayed in a list box at the right side of the window.
- 3 Select the UP-D8800 in the list box.
The SCSI address of the connection is displayed.
- 4 Close the Chooser window.

■ Page Setup

Page Setup selects the paper size, printing quality (resolution), and amount of enlargement or reduction. You can change the settings before you start printing, and when necessary, you can change the amount of enlargement or reduction during the print process.

- 1 Select "Page Setup" from the File menu.
The Page Setup dialog box is displayed.



- 2 Select the desired items in the dialog box. See the descriptions below for the meaning of each Setup item.
- 3 Confirm your Page Setup selections, and click OK.
The dialog box closes.

Page Setup Dialog Box Items

Each item in the Page Setup dialog box is described below.

- **Paper Size**
Select from the following sizes: Letter Size, A4 Size and A4+ (plus) Size
- **Resolution**
Select a resolution for printing: 150 dpi (dots per inch) or 300 dpi

Note:

On A4+ size paper, the file size for a 300 dpi image is approximately 27 Mbytes, and the file size for a 150 dpi image is approximately 7 Mbytes.

- **Enlarge/Reduce**

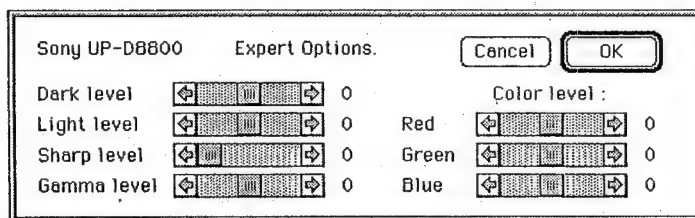
Enter the desired percentage of enlargement or reduction from the keyboard. You can enter any (positive) integer value from 25 to 400%. If you are working with a software image that is larger than the paper size in the printer, you can select a reduction percentage that will allow the image to print on the available paper. Your selection is applied both vertically and horizontally to the page image. So, for example, if you enter 200%, the printed image will be twice as high, and twice as wide, as normal. That is, it will occupy four times the area that it would normally (at 100%).

- **Orientation**

Select whether your pages should print in portrait (tall, the default) or landscape (wide) format.

- **Expert...**

This displays the "Expert Options" dialog box, from which you can select from the following printing options:



- **Contrast and Color Levels**

The Dark and Light level sliders adjust the contrast of the printed output. The Dark level slider adjusts the black level, and the Light level slider adjusts the white level. The range is from -32 to +32.

The Sharp level slider adjusts the degree of emphasis of edges in the printed output. The range is from 0 to +3.

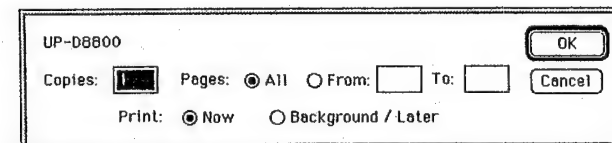
The Gamma level slider adjusts the contrast curve. The range is from -32 to +32.

The Color level sliders adjust the level of each color. The range is from -32 to +32.

■ Printing

Follow this procedure to print with the UP-D8800 from an application.

- 1 Choose "Print" from the File menu.
The Print dialog box is displayed.



- 2 Select the desired items in the dialog box. See the descriptions below for the meaning of each Print item.
- 3 Confirm your selections, and click OK.
Printing begins.
Click Cancel if you want to stop printing before the task is completed.

Print Dialog Box Items

Each item in the Print dialog box is described below.

- **Copies**

Set the number of copies you want to print of each page (if more than one). A maximum of 20 sheets can be printed at once.

- **Pages**

Select which page(s) to print.

"All" prints every page of the document that is opened in the application.

"From" and "To" let you enter from the keyboard the page numbers of the starting and ending pages you wish to print.

- **Print**

Select the method of timing (priority) of the print job.

"Now" causes printing to begin immediately in the foreground when you click OK.

"Background/Later" causes printing to begin in the background when you click OK.

1-9. PHOTOSHOP PLUG-IN MODULE OPERATION

Background Printing

Printing "Now" in the foreground gives the printer driver the full use of your computer's processor while printing, so you cannot do any other work in the foreground until the printing job is finished (or canceled).

Background printing, however, allows you to do other work in the foreground while the printer is working. For example, while printing a slide image in the background, you could be writing a manuscript for an announcement at the same time.

■ System Requirements for Background Printing

The supplied UP-D8800.Background software is necessary for background printing. (See page 14.) This program works together with the Chooser Level Driver. In addition to the requirements explained on page 14, the following conditions must be satisfied.

- Enough free space on the hard disk for the document image (the amount of space depends on the size and type of the document.)

■ Summary of Action

When you initiate printing from an application while UP-D8800.Background is active, a copy of the document called a spoolfile is written to the hard disk. If foreground ("At Once") printing is selected, once printing begins, no other foreground activity is possible until printing finishes. With background printing, on the other hand, you can continue working in other applications as soon as the spool file has been written to the hard disk.

When the print job is finished, the spool file is deleted automatically.

The Photoshop plug-in module allows the UP-D8800 to print images from the Photoshop application. The plug-in module allows color calibration of printer output, adjustment of image printing size and printing conditions for graphics.

Installation and use of the Photoshop plug-in module is described here.

Installing the Plug-in Module

This procedure describes installation of the plug-in module for the Macintosh.

- 1 Insert the supplied floppy disk labeled "Printer Plug-In Module for Macintosh" into the floppy disk drive of the Macintosh.
- 2 Double click the disk icon to open the drive window.
- 3 Copy the "UP-D8800.ColorTable" file by dragging its icon to the Plug-ins folder in the Photoshop folder.
- 4 Double click the Japanese folder to use Japanese, or the English folder to use English.
- 5 Copy the "UP-D8800 Export" file by dragging its icon to the Plug-ins folder in the Photoshop folder.

Note:

To activate the plug-in module, you must restart Photoshop after installation.

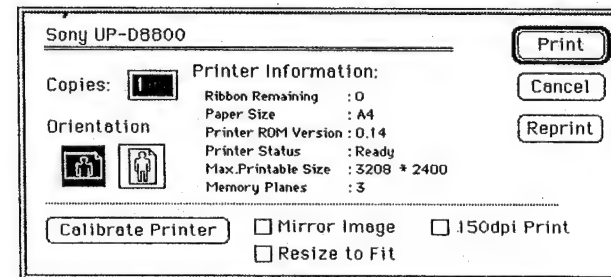
Printing an Image

When you print an image, the image file must be opened in Photoshop before opening the main dialog box of the plug-in module.

Main Dialog Box Display

To print an image, display the main dialog box with the following procedure.

- 1 Double click the Photoshop icon to start Photoshop.
- 2 Open the image file that you want to print. The printer software supports 3-channel RGB and 1-channel grayscale.
- 3 Choose "Export" in the File pull-down menu, then choose "Sony UP-D8800 Export..." from the submenu.
The main dialog box for the Sony UP-D8800 is displayed.



Note:

If the printer is off or the SCSI cable disconnected, the following message is displayed:

"No response from UP-D8800."

Please confirm that the printer is switched on and the cable is connected.

■ Main Dialog Box Items

The main dialog box lets you check and adjust the condition of the image data and the printer.

Copies

Select the number of copies you want to print. A maximum of 20 sheets can be printed at once. This setting is fixed to one unless the printer is equipped with the UPK-8801 add-on memory kit.

Orientation

Select whether your pages should print in Portrait (tall) or Landscape (wide) format. The correct button is selected by default, but you may override this if you desire.

Printer Information

Information on the current state of the printer is displayed. When the Printer Status displays Ready, you can print. Other possible states are: Check Paper Tray, Check Ribbon Cassette and Out of Paper.

Other printer information displayed is the number of sheets that can be printed with the remaining length of the ribbon, the currently selected paper size, the ROM version of the printer, the largest possible printing size (in pixels), and the number of frames in memory.

Mirror Image

To print a mirror image (left-right reversed), check here.

150 dpi Print

Check here to change output resolution to 150 dpi. Selecting 150 dpi Graphics increases the maximum size of an image that can be printed.

Resize to Fit

When selected, this option adjusts the size of the printed image to the maximum size printable by the UP-D8800. This option is available only when the printer is equipped with the UPK-8801 add-on memory kit.

Print

Start printing the image.

Cancel

Click here to close the dialog box with no changes.

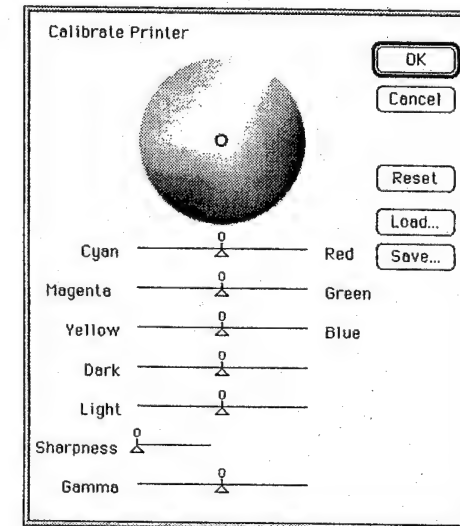
Reprint

Click here to print another copy of the same image that was just printed (and stored in memory). This button is effective only when the printer is equipped with the UPK-8801 add-on memory kit.

Calibrate Printer

Click this button to bring up the Color Calibration dialog, to adjust the way the printer handles color, contrast and sharpness properties of the image. This option is available only when the printer is equipped with the UPK-8801 add-on memory kit.

■ Calibration Dialog Box



Parameter Range

Cyan-Red	-32 ~ +32
Magenta-Green	-32 ~ +32
Yellow-Blue	-32 ~ +32
Dark	-32 ~ +32
Light	-32 ~ +32
Sharpness	0 ~ +3
Gamma	-32 ~ +32

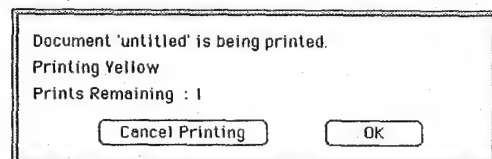
Button Functions

The functions of the buttons are as follows:

- **OK**
Send the displayed settings to the printer.
- **Cancel**
Return to the Main dialog box. Any changes to the parameters are ignored.
- **Reset**
Return all parameter settings to their initial values.
- **Load**
Load a set of calibration parameters that has been previously saved to disk.
- **Save**
Save the current parameter settings to disk.

■ Printer Status Dialog Box

After you choose "Sony UP-D8800 Export..." from the "Export" menu selection and begin printing, the Printer Status dialog box is displayed. This dialog shows the current status of the printer. You can stop the print job and eject the page by clicking "Cancel Printing" button.



Click the OK button to remove the Printer Status dialog box and return to the Photoshop window.

If you want to cancel printing when the Printer Status dialog box is not displayed, choose "Sony UP-D8800 Export..." from the "Output Device" menu, to bring up the Printer Status dialog box, then click "Cancel Printing".

1-10. BEFORE USING THE WINDOWS SOFTWARE

System Environment

■ Required Hardware

- The Windows software requires a personal computer with at least a 386SX-speed processor, capable of running MS Windows 3.1, with the following:
- At least 16 MB of RAM.*
- At least 40 MB of hard disk space.**
- A SCSI host adapter.***
- A Sony model UP-D8800 or UP-D7000 digital color printer.

* Although the software may function in a system with less than 16 MB of RAM, performance is remarkably reduced if there is not enough memory available for image data expansion and processing.

** The Chooser Level Driver generates a file image of the data to be printed from the application, and writes this spool file to the hard disk. The spool file is created in the directory assigned to the Windows TEMP environment variable (defined with the "SET TEMP=" line in the AUTOEXEC.BAT file). If your printer is not equipped with the UPK-8801K add-on memory kit, the plug-in module also creates a spool file in the Windows directory. With the Chooser Level Driver, at least 40 MBytes of disk space will be needed for the spool file; and with the plug-in module, at least 15 MBytes will be needed. If there is not enough space available for the spool files, printing is not possible.

*** The following SCSI host adapters have been determined to be compatible (as of September 1994). Please refer to the READ.ME file for additional SCSI compatibility issues.

- Adaptec models AHA-1542CF, AHA-1522A and AHA-2742T

For details of SCSI host adapter installation with your host computer, please refer to your SCSI host adapter documentation.

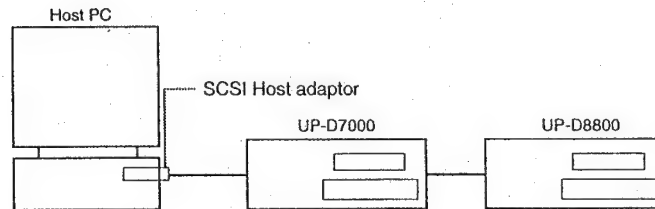
1-11. CHOOSER LEVEL DRIVER

■ Supported SCSI Configuration

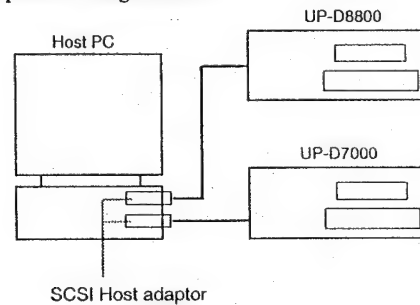
The Chooser Level Driver assumes that the printer is connected to a SCSI bus with a single SCSI host adapter. The software may not function properly on a system in which multiple printers are connected through two or more SCSI host adapters.

Supported Configuration

The following diagram indicates the supported SCSI configuration.



Non-Supported Configurations



■ Software Environment

The following software is required for installation and operation of the Chooser Level Driver:

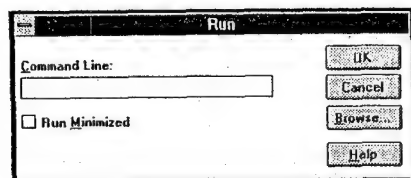
- Microsoft MS-DOS Version 5.0 or above.
- Microsoft Windows Version 3.1
- Windows ASPI (Advanced SCSI Programming Interface)
- DOS ASPI

The Chooser Level Driver works with Microsoft Windows 3.1 to process printer output from Windows applications, for printing on the digital color printer.

Installing the Chooser Level Driver

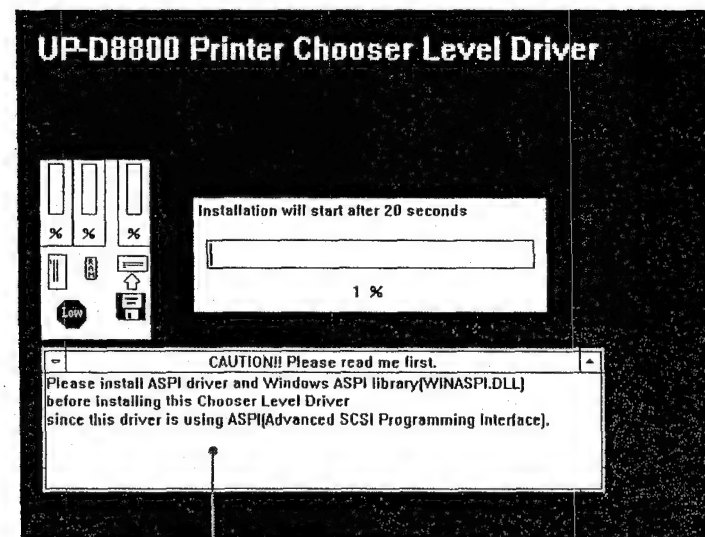
This procedure describes installation of the Chooser Level Driver.

- 1 Turn on the computer and start Windows.
- 2 Insert the supplied floppy disk labeled "Chooser Level Driver for Windows DISK 1" into the floppy disk drive of the computer. The following assumes that the disk is in drive A. If you have the disk in a different drive (e.g., B), please substitute that letter as appropriate.
- 3 In the Windows Program Manager, select "Run..." from the File drop-down menu to display the Run dialog box.



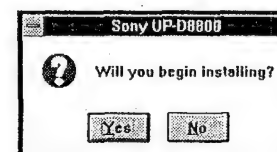
- 4 Type "A:SETUP" in the text box, and click OK.

Installation begins, and the next window is displayed.



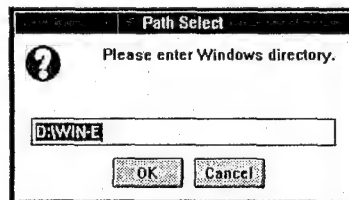
A display appears showing things you should keep in mind when installing the software.
If the window is too small for your display resolution, expand it by dragging the window border with the mouse.

After about 20 seconds, the following dialog box appears:

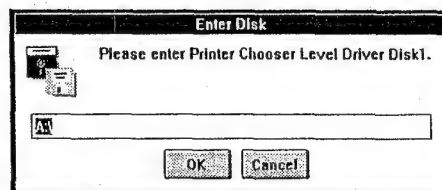


Note:
Setup can also be run from the Windows File Manager.

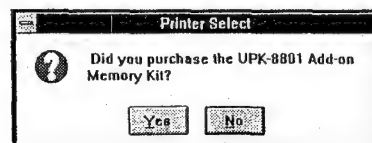
- 5 If you click Yes, you are asked for the directory in which you have Windows installed.



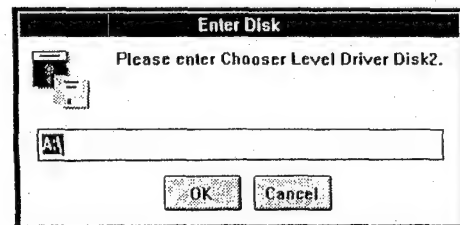
- 6 Enter the Windows directory.
The following dialog appears.



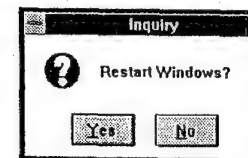
- 7 Choose OK.
You are then asked whether your printer is equipped with the UPK-8801 add-on memory kit.



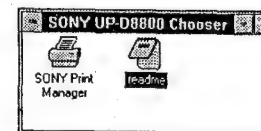
- 8 Answer appropriately for the printer that you have connected.
Installation proceeds and the next message is displayed.



- 9 Choose OK.
Installation proceeds until the next message is displayed, as installation ends.



- 10 Choose Yes.
Windows is restarted, and a new program group, "SONY UP-D8800 Chooser", is displayed in the Program Manager.



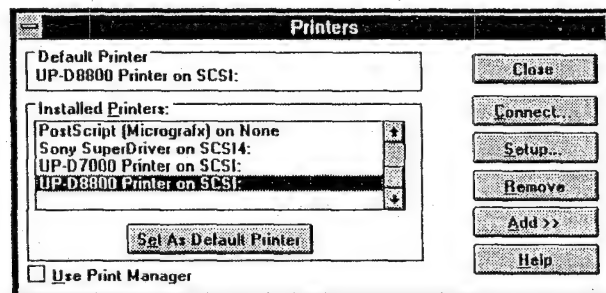
This completes the installation.

Printing

■ Printer Setup

After installation, you need to set up the printer.

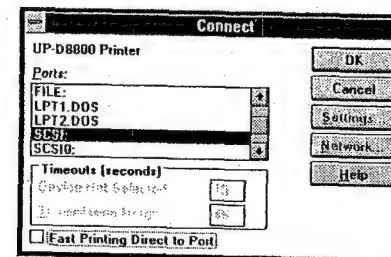
- 1 Open the Control Panel in the Main group, and choose the Printers applet.
The Printers setup dialog is displayed.



- 2 Select "UP-D8800 Printer on SCSI :'" from the list of printers.
- 3 If the "Use Print Manager" check box is checked, click it so that it is now unchecked.
- 4 Click the "Set As Default Printer" button.
- 5 Refer to the information on the following pages to set up the printer connection and other printer settings:

• "Connect..." button

If using multiple printers, press this button to display the following dialog, to select the printer port and time-out settings.



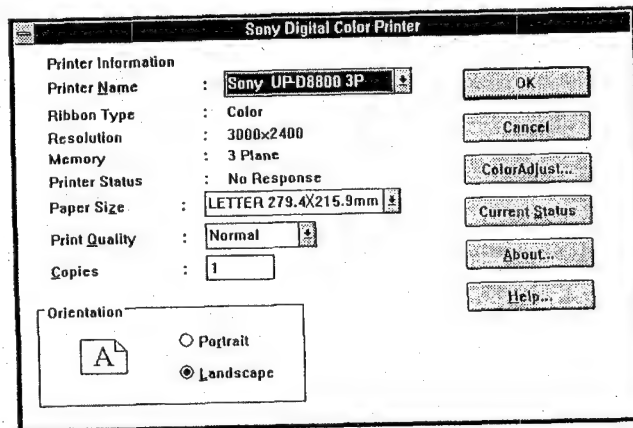
During the installation procedure, the "SCSI:" port is selected. This selection allows the Print Manager supplied with this Kit (see page 42) to search the SCSI bus IDs, beginning with SCSI ID 0, for the first printer on the bus (the one with the lowest SCSI ID).
You can specify a particular SCSI ID to use the printer that has that ID number.

Note:

If both the UP-D8800 and the UP-D7000 are connected to your system, be sure to specify the SCSI ID.

• **"Setup..." button**

You can press this button to display the following dialog, to select print paper size, orientation and image settings. This dialog is displayed:



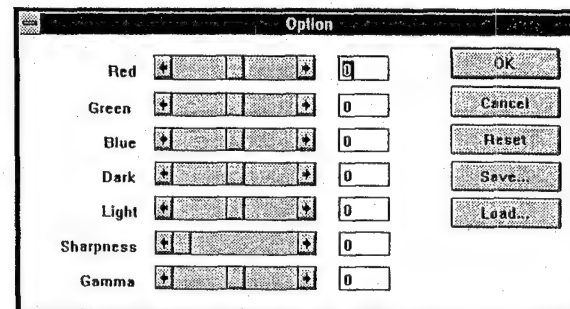
Here you can assign a name for the printer, paper size and orientation, printing quality (UP-D8800 only) and the number of copies to print. Except for the printer name, the rest of these settings are usually made when printing from an application program.

Note:

In the Printer Name box, select UP-D8800 3P if your printer is equipped with the UPK-8801 Add-on Memory Kit; otherwise, select UP-D8800 1P. Pressing the Current Status button automatically sets the correct printer selection in the Printer Name box.

• **ColorAdjust... Button**

Press this button to display the following dialog, in which you can adjust printer color rendition. This option is available only when using a UP-D8800 that is equipped with the UPK-8801 add-on memory kit.



Red, Green and Blue sliders adjust the level of each color in the printed output. Range is from -32 to +32.
The Dark and Light sliders adjust the black and white levels, respectively. The range is from -32 to +32.
The Sharpness slider adjusts the degree of emphasis of edges in the printed output. (UP-D8800 only). The range is from 0 to +3.
The Gamma level slider adjusts the contrast curve. This function is available only when using the UP-D8800. The range is from -32 to +32.

• **Current Status Button**

Press this button to interrogate the printer for its current paper size, color adjustment and status.

• **About... Button**

Press this button to display the version information of the Chooser Level Driver, as follows:



■ Printing

Printing is started by selecting the Print command from the File menu inside a Windows application. Most applications provide access to a Printer Setup dialog that allows you to select appropriate settings, such as the number of copies to print and page orientation, for the application. However, these settings can also be made from the Printers dialog in the Windows Control Panel (page 37) if they are not available from an application's menu.

When installed as described above, the Print Manager supplied with this Kit runs automatically. The functions of this Print Manager are described below.

Note:

While data is being sent to the printer, "READY" and "IMAGE TRANSFER" are displayed in rapid alternation. Although this may make it difficult to see the cursor, it is not a sign of any malfunction.

Print Manager

The Print Manager provides the following services:

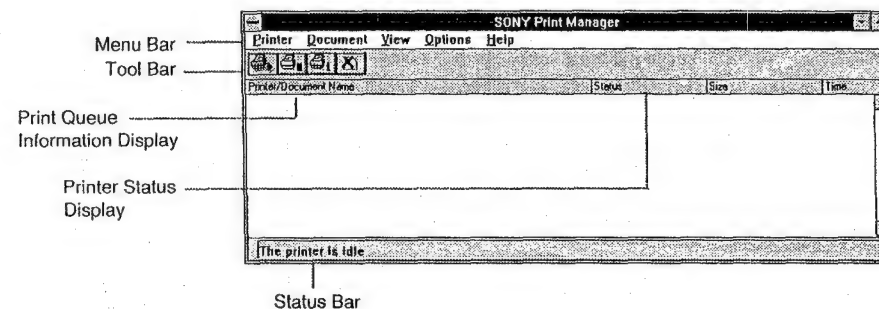
- Lists print jobs waiting in queue.
- Allows pausing and resuming a print job.
- Allows deleting print jobs from the queue.
- Allows changing the printing speed.
- Displays the printer status.
- Allows changing the display layout.
- Provides a printer status monitor window.

The above functions are basically the same as those of the MS-Windows 3.1 Print Manager. However, this Print Manager has the following limitations not present in the Microsoft Print Manager:

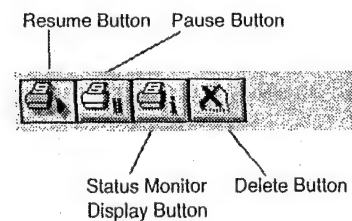
- Printing through MS-DOS is not supported. If you select "High Speed Printing", the speed does not change.
- The order of print jobs in the queue cannot be changed.
- Network print management is not supported.

■ Print Manager Window

The Print Manager window appears as below.



Each button on the tool bar appears as follows:



The menu functions are:

- **Printer**
Under this item you can Pause or Resume a print job, or End (clear the print queue).
- **Document**
Delete a print job from the queue.
- **View**
Here you can change the way items appear in the Print Manager window, and start the Status Monitor.
- **Options**
Here you can select whether to display the tool bar and status bar, select the display font, change the width of display columns, and select printing speed.

■ Pause Printing

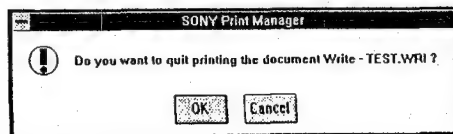
To pause printing:

- 1 Select the job that is currently printing from the queue list.
- 2 Choose Pause from the tool bar or Printer menu.
The flow of image data to the UP-D8800 stops.
Choose Resume from the Printer menu or tool bar to resume printing.

■ Deleting a Print Job

Queued or paused print jobs can be deleted from the queue, as follows:

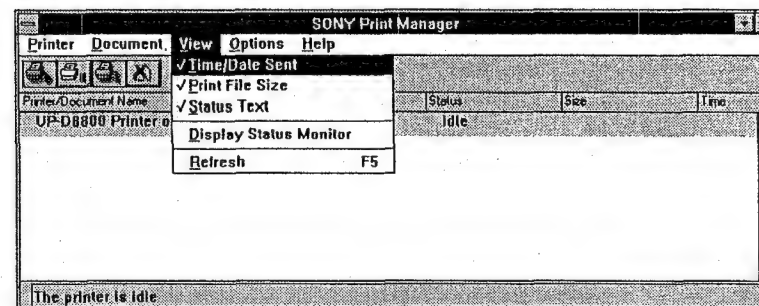
- 1 Pause printing, and select the file to be deleted from the queue list.
- 2 Choose Delete from the Document menu or tool bar.
The confirmation dialog below appears.



- 3 Click OK to delete the job.

■ Print Manager Display Setup

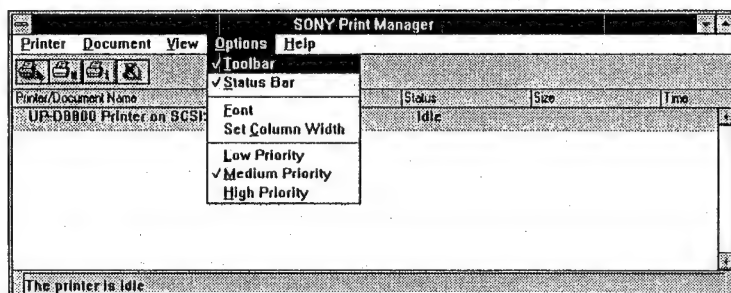
You can select which items to display in the Print Manager window, as follows:



- **Time/Date Sent**
You can choose whether to display the creation time and date of files in the print queue, and their percentage of completion. Uncheck this box if you do not want this information to be displayed.
- **Print File Size**
Leave this box checked to display the file size of each print job in the queue.
- **Status Text**
Leave this box checked to display the current state of the printer on the Print Manager window.
- **Display Status Monitor**
Leave this box checked to display the Status Monitor window.
- **Refresh**
Click here to redisplay the Print Manager window with any changes you have made.

Options

This menu item lets you set up various options.



- **Tool Bar**

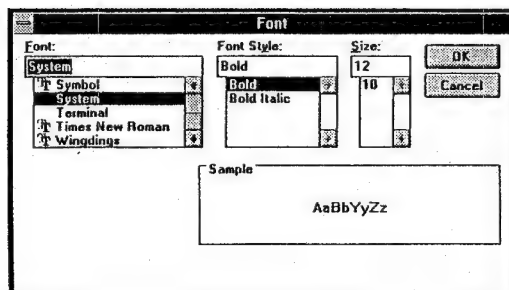
Choose whether to display the tool bar.

- **Status Bar**

Choose whether to display the status bar.

- **Font**

You can select a screen font for the Print Manager queue, as follows:



Select a font name, style and size, and choose OK.

- **Set Column Width**

You can set the width of the Print/Document Name column.

Printing Speed

You can select the printing speed by choosing its priority.

Choose Low Priority if you want an application program to take priority over printing. Data will be sent to the printer while the application is idle (such as when awaiting user input).

Choose Medium Priority to have applications and the printer share equal priority.

Choose High Priority to have the printer take the highest priority (fastest printing).

Help

Select the desired menu item to see the Windows help screens for the Print Manager.

Select the About menu item to display version information on this Print Manager.



Closing the Print Manager

To close the Print Manager:

If the Print Manager window is open, choose Close from the Printer menu.

If the Print Manager is iconized, click on the icon, and choose Close.

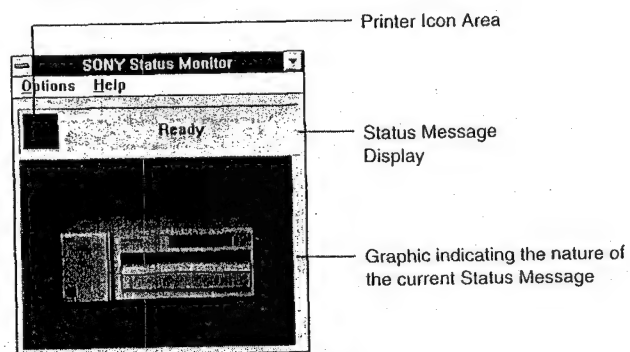
Status Monitor Window

The Status Monitor Window is displayed in the following situations:

- If a printer error occurs.
- If you choose the Printer Status Display button on the Print Manager tool bar, or if you choose Status Monitor Display from the Display menu of the Print Manager.
- If you have previously selected "Always Display During Printing" from the Status Monitor Window (Status Monitor Option Setup dialog).

■ Status Monitor Window Display

- The Status Monitor window looks like this:

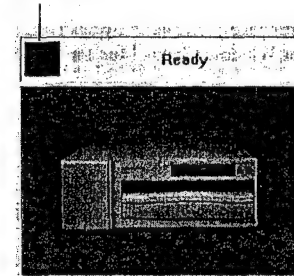


The function of each window region is as follows:

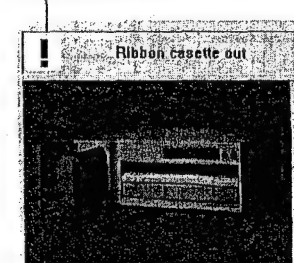
• Icon Area

One of the following icons indicates the current error status.

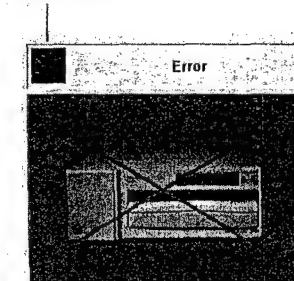
No Errors



Warning Level Error



Fatal Error



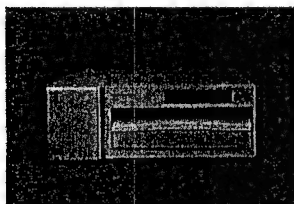
• **Status Messages**

A status message indicates the current error state.

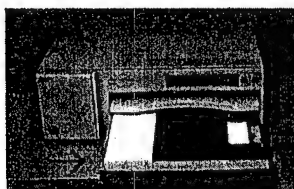
Error Condition	Status Message
No Error	Ready Printing
Warning Level	Paper tray out Paper cover out Ribbon cassette out Paper end Ribbon end Jamming Media mismatch Stop by key
Fatal Error	Check printer power or cable connection Printer motor or sensor trouble*

* The printer hardware is malfunctioning. Contact your supplier for service, or your nearest Sony Service Center.

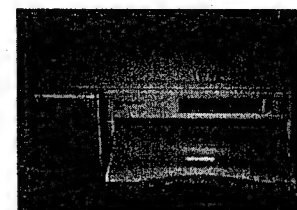
Status Message Graphic



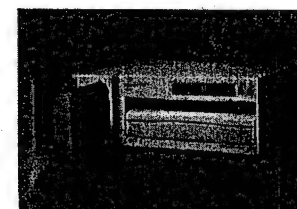
Ready
Printing



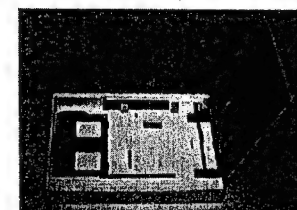
Paper tray out



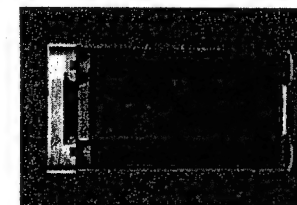
Paper cover out



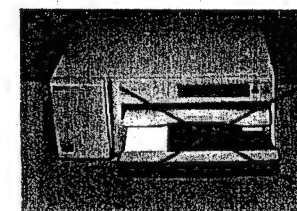
Ribbon cassette out



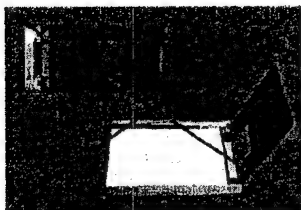
Paper end



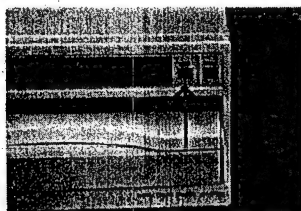
Ribbon end



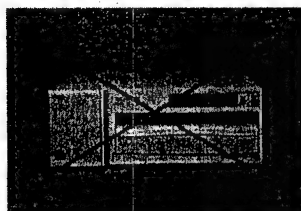
Jamming



Media mismatch



Stop by key

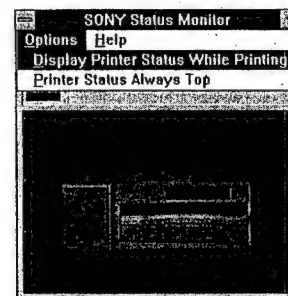


- Check printer power or cable connection.
- Printer motor or sensor trouble.

The status message graphic is displayed in this window. The graphic may be difficult to see with a 16- or 256-color display.

■ Changing the Status Monitor Display

The behavior of the Status Monitor window can be changed from the Setup menu.



• Display Printer Status While Printing

When this selection is checked, the Status Monitor is automatically activated when you start printing. Uncheck the item to cause the Status Monitor window to appear only when manually activated from the Print Manager tool bar or Display menu.

• Printer Status Always Top

Check this selection to have the Status Monitor window always on top (in front of) any other windows, so it is always visible.

■ Using Help

The Help menu provides help on this Print Manager, and the version number of the Status Monitor.

Choose About to display the following window:



1-12. PHOTOSHOP PLUG-IN MODULE OPERATION

■ Status Monitor Icons

One of the following icons indicates the error status in the Status Monitor.



No Errors



Warning Level Error

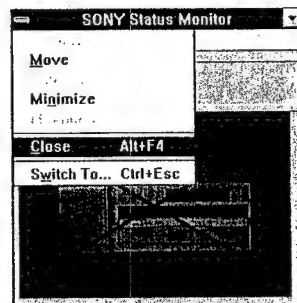


Fatal Error

The Photoshop plug-in module allows the UP-D8800 to print graphic images from the Photoshop application. The plug-in module allows color calibration of printer output, selection of 150-dpi graphics output and other printing controls for graphics.

■ Close Status Monitor

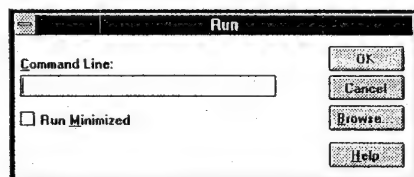
Choose Close from the Control menu to close the Status Monitor window.



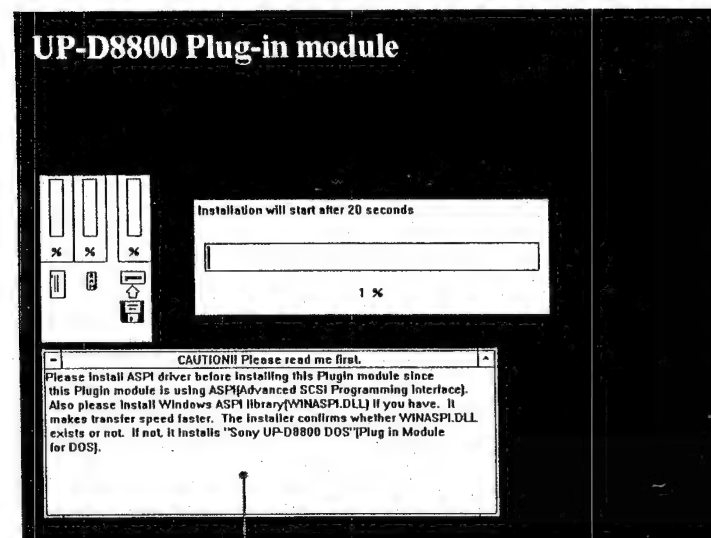
Installing the Plug-in Module

This procedure describes installation of the plug-in module for Windows

- 1 Turn on the computer and start Windows.
- 2 Insert the supplied floppy disk labeled "Printer Plug-In Module for Windows" into the floppy disk drive of the computer. The following steps assume that the disk is in drive A. If you have the disk in a different drive (e.g., B), please substitute that letter as appropriate.
- 3 In the Windows Program Manager, select "Run..." from the File drop-down menu to display the Run dialog box.

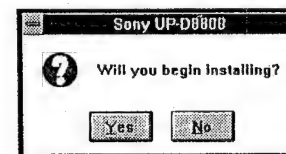


- 4 Type "A:SETUP" in the text box, and click OK. Installation begins, and the next window is displayed.



If the window is too small for your display resolution, expand it by dragging the window border with the mouse.

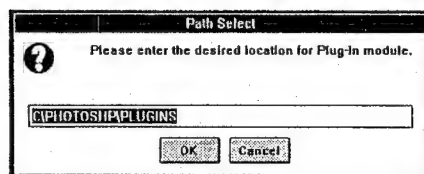
After about 20 seconds, the following dialog box appears:



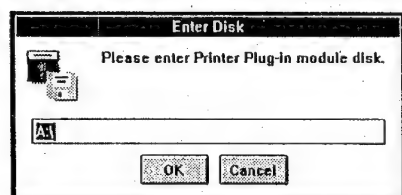
Note:

Setup can also be run from the Windows File Manager.

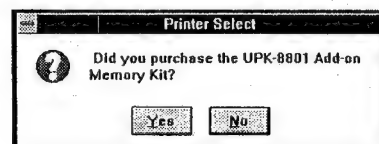
- 5 You are asked for a subdirectory in which to install the Photoshop Plug-In Module software.



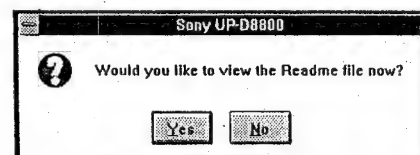
- 6 Type the desired subdirectory.
The next window is displayed.



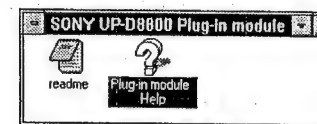
- 7 Choose OK. You are then asked whether your printer is equipped with the UPK-8801 add-on memory kit.



- 8 Answer appropriately for the printer that you have connected.
Installation proceeds until the next message is displayed, as installation ends.



- 9 Choose Yes to view the READ.ME file. When finished, a new program group, "SONY UP-D8800 Plug-in module", is displayed in the Program Manager.



This completes the installation.

Printing an Image

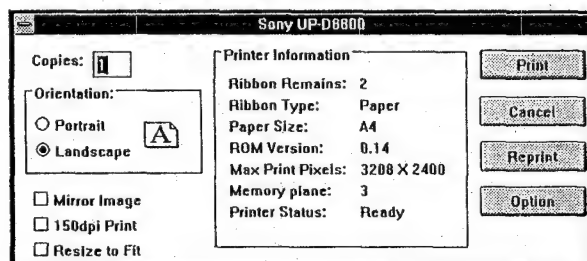
When you print an image, the image file must be opened in Photoshop before opening the main dialog box of the plug-in module.

■ Print Procedure

To print Photoshop images, use the following procedure:

- 1 Start the Photoshop application.
- 2 Open the image file that you want to print. (This software supports 3-channel RGB, and 1-channel grayscale.)
- 3 Choose "Export" from the File menu. If your SCSI host adapter supports only DOS ASPI, choose the "Sony UP-D8800 DOS..." submenu. If your host adapter supports Windows ASPI, choose the "Sony UP-D8800..." submenu.
The main dialog box for the Sony UP-D8800 appears.

■ Main Dialog Box Functions



• Copies

If your printer is equipped with the UPK-8801 add-on memory kit, this option allows you to set the number of copies you want to print. A maximum of 20 sheets can be printed at once. The setting is fixed to 1 for printers that are not equipped with the UPK-8801 add-on memory kit.

• Orientation

Select whether your pages should print in Portrait (tall) or Landscape (wide) format. The correct button is selected by default, but you may override this if you desire.

• Printer Information

Information on the current state of the printer is displayed. When the Printer Status displays Ready, you can print. Other possible states are: Check Paper Tray, Check Ribbon Cassette and Out of Paper. Other printer information displayed is the number of sheets that can be printed with the remaining length of the ribbon, the currently selected paper size, the ROM version of the printer, the largest possible printing size (in pixels), and the number of memory frames.

• Mirror Image

To print a mirror image (left-right reversed), check here.

• 150dpi Print

Check here to change output resolution to 150 dpi. Note that selecting 150 dpi Print decreases the maximum size of an image that can be printed.

• Resize to Fit

When selected, this option adjusts the size of the printed image to the maximum size printable by the UP-D8800. This option is available only when the printer is equipped with the UPK-8801 add-on memory kit.

• Print

Starts printing the image.

• Cancel

Click here to stop printing and cancel the current job.

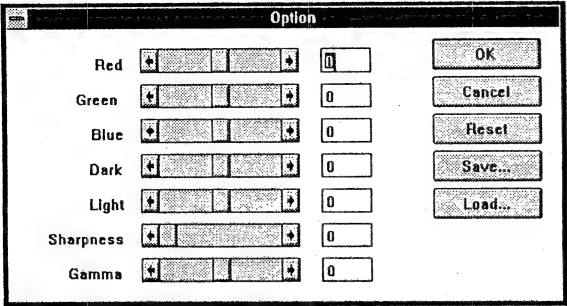
• Reprint

Click here to print another copy of the same image that was just printed (and stored in memory). This option is available only when the printer is equipped with the UPK-8801 add-on memory kit.

• Option

Click this button to adjust the way the printer handles color, contrast and sharpness properties of the image. This option is available only when the printer is equipped with the UPK-8801 add-on memory kit.

■ Option Dialog Box



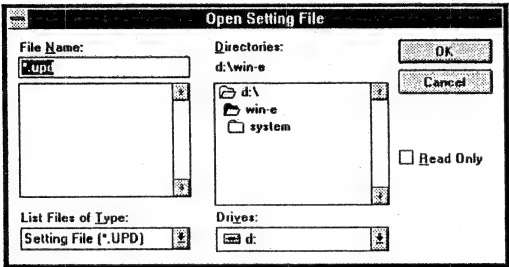
• Parameter Range

Red	-32 ~ +32
Green	-32 ~ +32
Blue	-32 ~ +32
Dark	-32 ~ +32
Light	-32 ~ +32
Sharpness	0 ~ +3
Gamma	-32 ~ +32

The functions of the buttons are as follows:

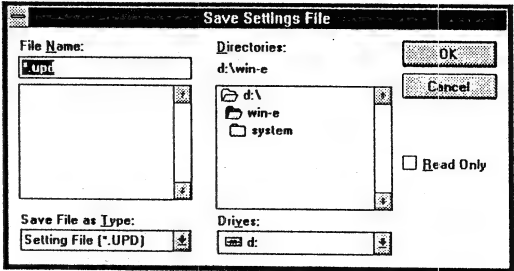
• Load

Load a set of color calibration parameters that has been previously saved to disk.



Select the parameter file to load, and click OK.

• Save



Save the current parameter settings to disk. Enter a file name, and click OK.

• Reset

Return all parameter settings to their initial values.

• OK

Send the displayed settings to the printer.

• Cancel

Return to the Main dialog box. Any changes to the parameters are ignored.

1-13. TROUBLESHOOTING

If a question arises during installation or operation of this Kit, please check the following items.

■ During Installation

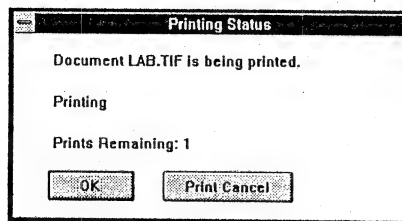
- **UP-D8800 icons fail to appear in the Chooser window of the Mac.**
Scroll the window to confirm that the icons are not just out of view. Make sure that the Printer Driver is in the current Extensions folder of the System folder.
Try closing and re-opening the Chooser window.
Restart the Mac.
- **When you click on the UP-D8800 icon in the Chooser, the printer name does not appear in the list box (no SCSI address is displayed).**
Turn off the Mac and all peripherals, and confirm that the SCSI cable is properly connected.
- **Windows displays an error message when you attempt to run A:SETUP.**
Confirm that the correct disk is in the correct floppy drive.

■ Printing Problems

- **The Mac displays the message "Printer not ready".**
Confirm that the power cable to the printer is plugged in, and that the printer and the Mac are connected together properly.
Is the printer selected? If it is, "READY" should appear on the printer's LCD.
If the LCD shows "NO PAPER" or "REMOVE PAPER" (in case of a paper jam) please see the instructions in the printer manual regarding error displays.
- **In Windows, if the Status Monitor indicates a warning level error:**
Please correct the cause of the error according to the accompanying status message ("Out of Paper" or "Out of Ribbon").
- **In Windows, if the Status Monitor indicates a fatal error:**
Contact your supplier for service, or your nearest Sony Service Center.

■ Printing Status Dialog Box

When you start printing, the Printing Status dialog box is displayed. This dialog shows the current status of the printer.



You can stop the print job and eject the page by clicking the Print Cancel button.

Click the OK button to remove the Printing Status dialog box and return to the Photoshop window.

If you want to cancel printing when the Printing Status dialog box is not displayed, choose "Sony UP-D8800..." or "Sony UP-D8800 DOS..." from the "Export" menu, to bring up the Printer Status dialog box, then click Cancel.

1-13. TROUBLESHOOTING

If a question arises during installation or operation of this Kit, please check the following items.

■ During Installation

- **UP-D8800 icons fail to appear in the Chooser window of the Mac.**
Scroll the window to confirm that the icons are not just out of view. Make sure that the Printer Driver is in the current Extensions folder of the System folder.
Try closing and re-opening the Chooser window.
Restart the Mac.
- **When you click on the UP-D8800 icon in the Chooser, the printer name does not appear in the list box (no SCSI address is displayed).**
Turn off the Mac and all peripherals, and confirm that the SCSI cable is properly connected.
- **Windows displays an error message when you attempt to run A:SETUP.**
Confirm that the correct disk is in the correct floppy drive.

■ Printing Problems

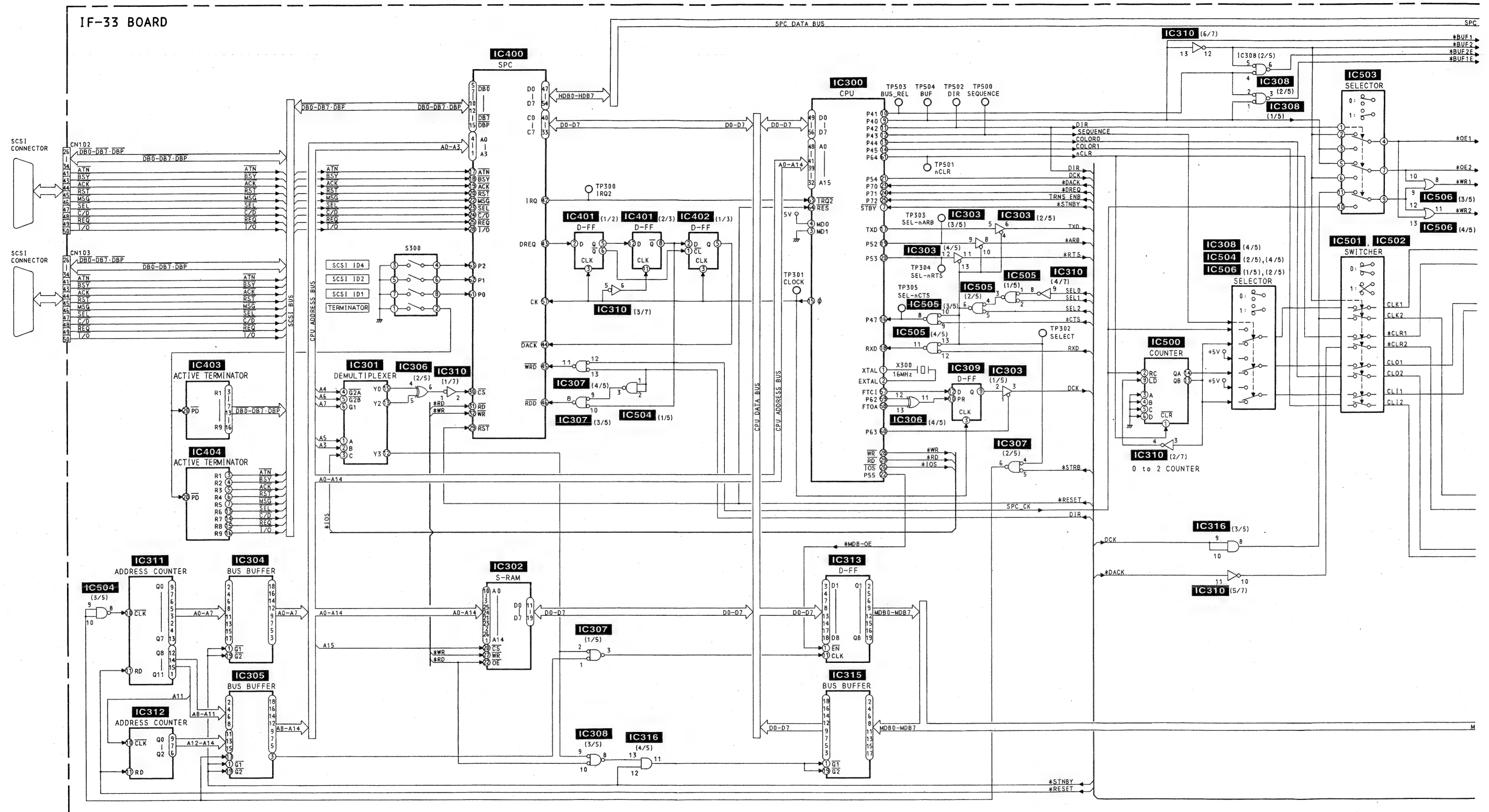
- **The Mac displays the message "Printer not ready".**
Confirm that the power cable to the printer is plugged in, and that the printer and the Mac are connected together properly.
Is the printer selected? If it is, "READY" should appear on the printer's LCD.
If the LCD shows "NO PAPER" or "REMOVE PAPER" (in case of a paper jam) please see the instructions in the printer manual regarding error displays.
- **In Windows, if the Status Monitor indicates a warning level error:**
Please correct the cause of the error according to the accompanying status message ("Out of Paper" or "Out of Ribbon").
- **In Windows, if the Status Monitor indicates a fatal error:**
Contact your supplier for service, or your nearest Sony Service Center.

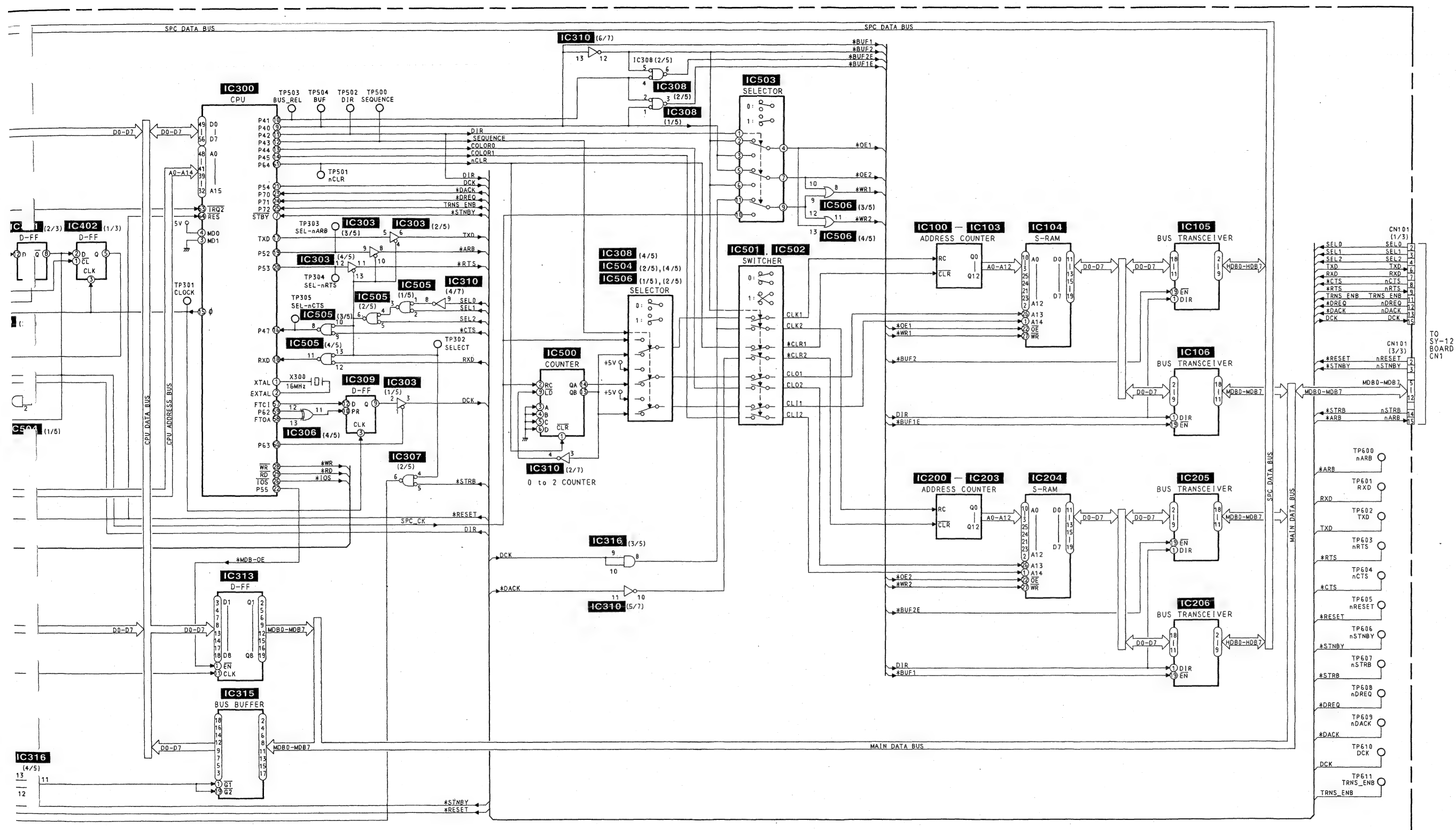
■ Problem During Background Printing

- **If an application appears to slow down or work intermittently during background printing:**
Your computer's processor divides its time between the foreground application and background printing. This will always cause the foreground application to slow down to some degree.

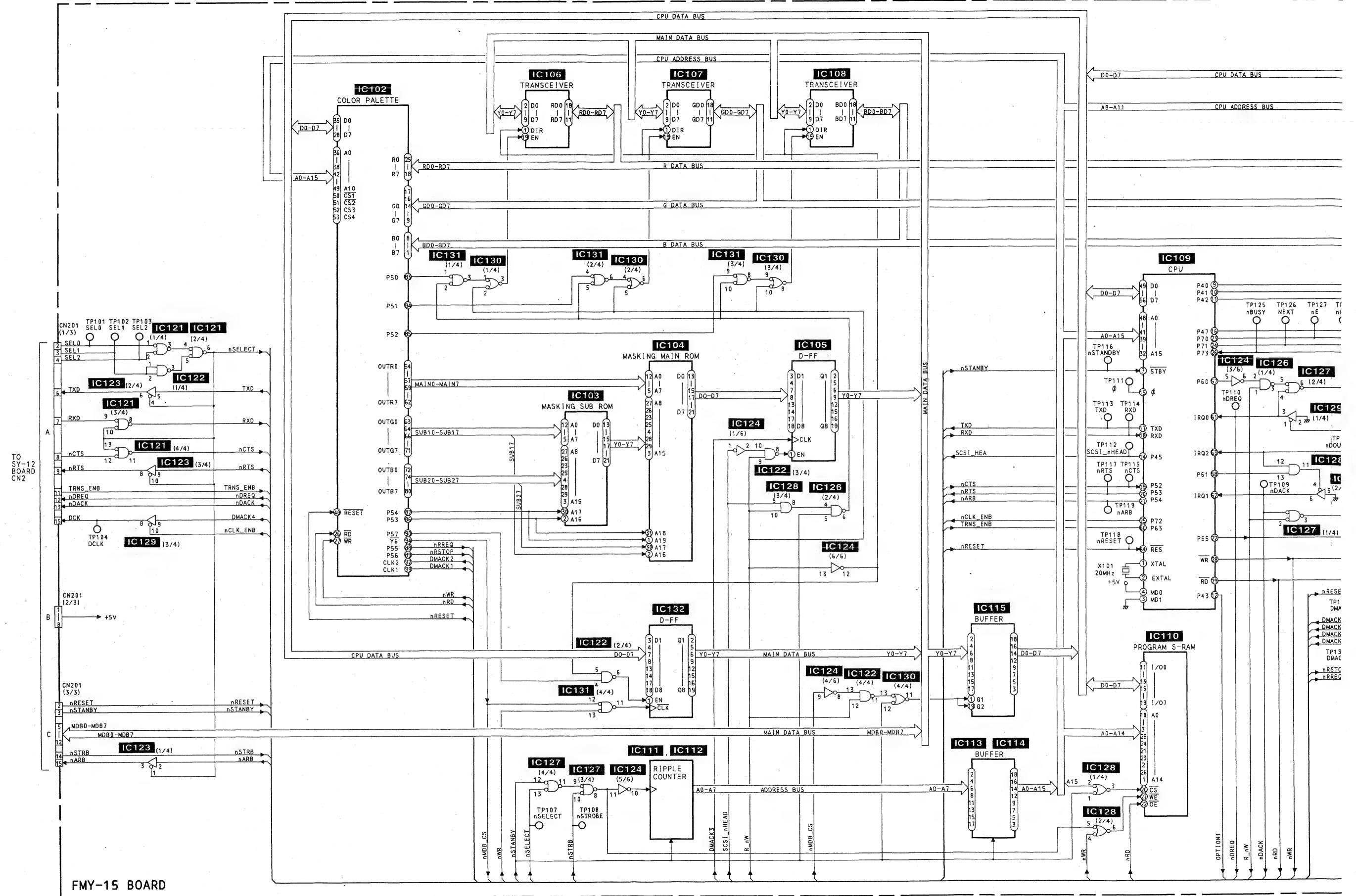
SECTION 2
DIAGRAMS

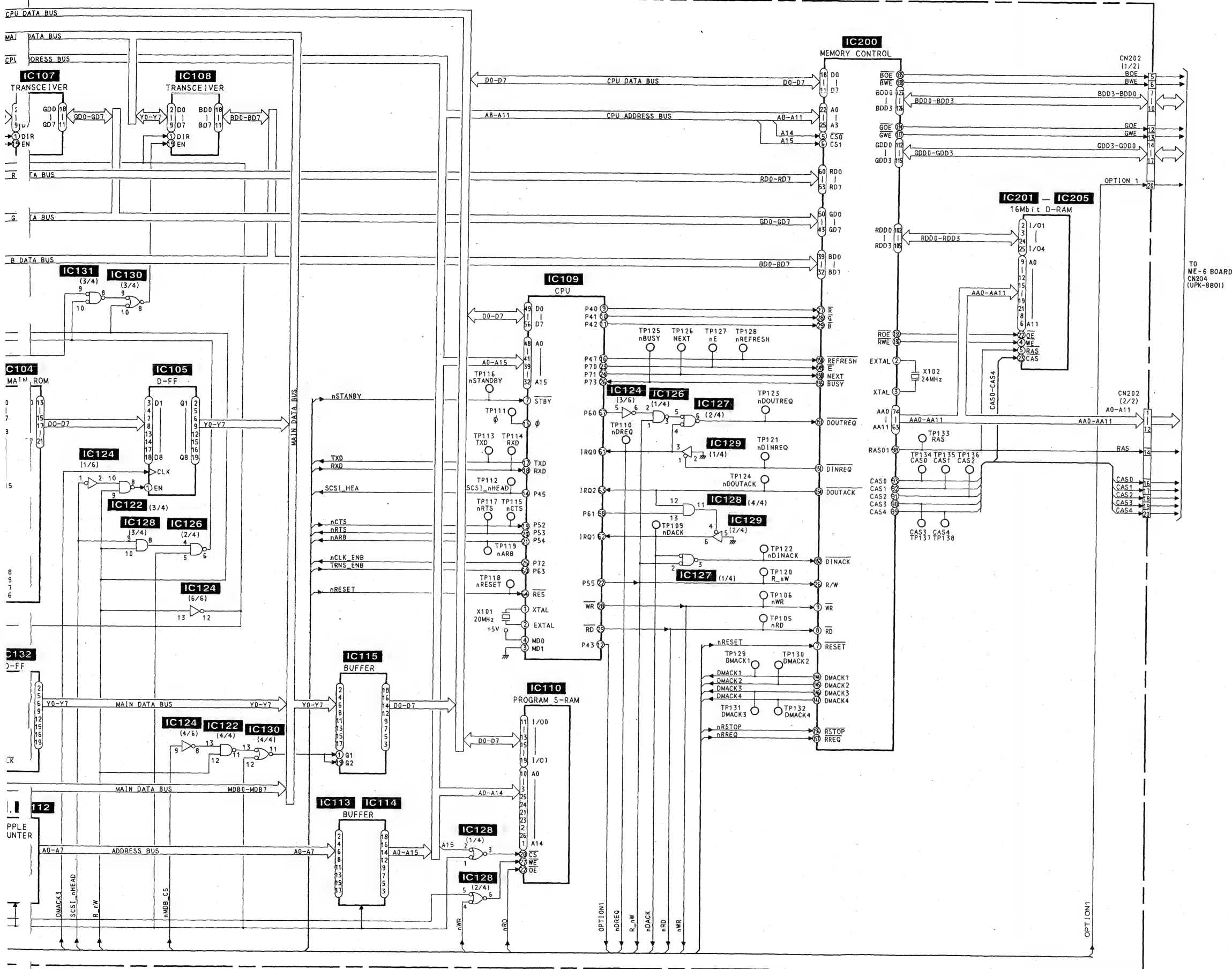
2-1. SCSI INTERFACE BLOCK DIAGRAM





2-2. FRAME MEMORY BLOCK DIAGRAM

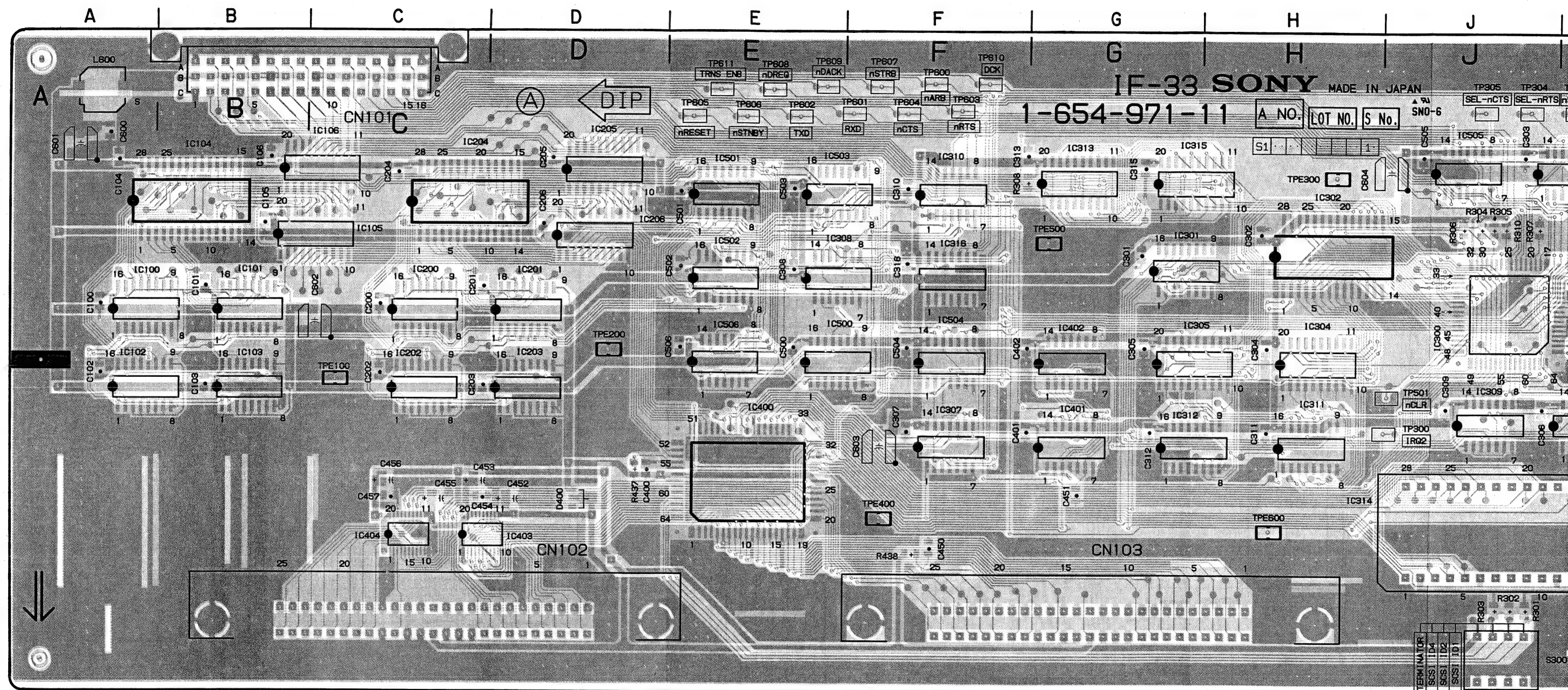




PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

3-1. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

IF-33 (SCSI INTERFACE)

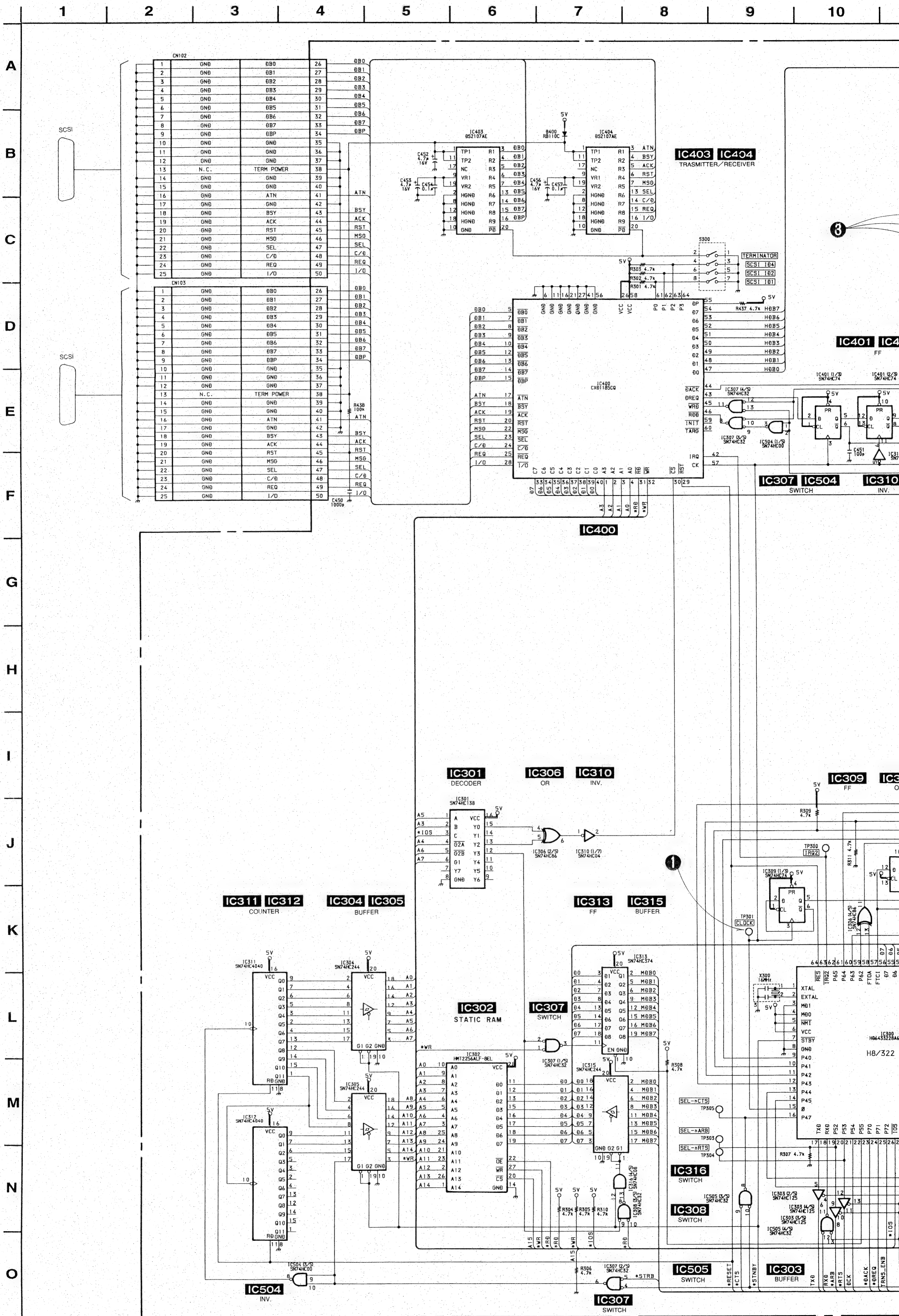


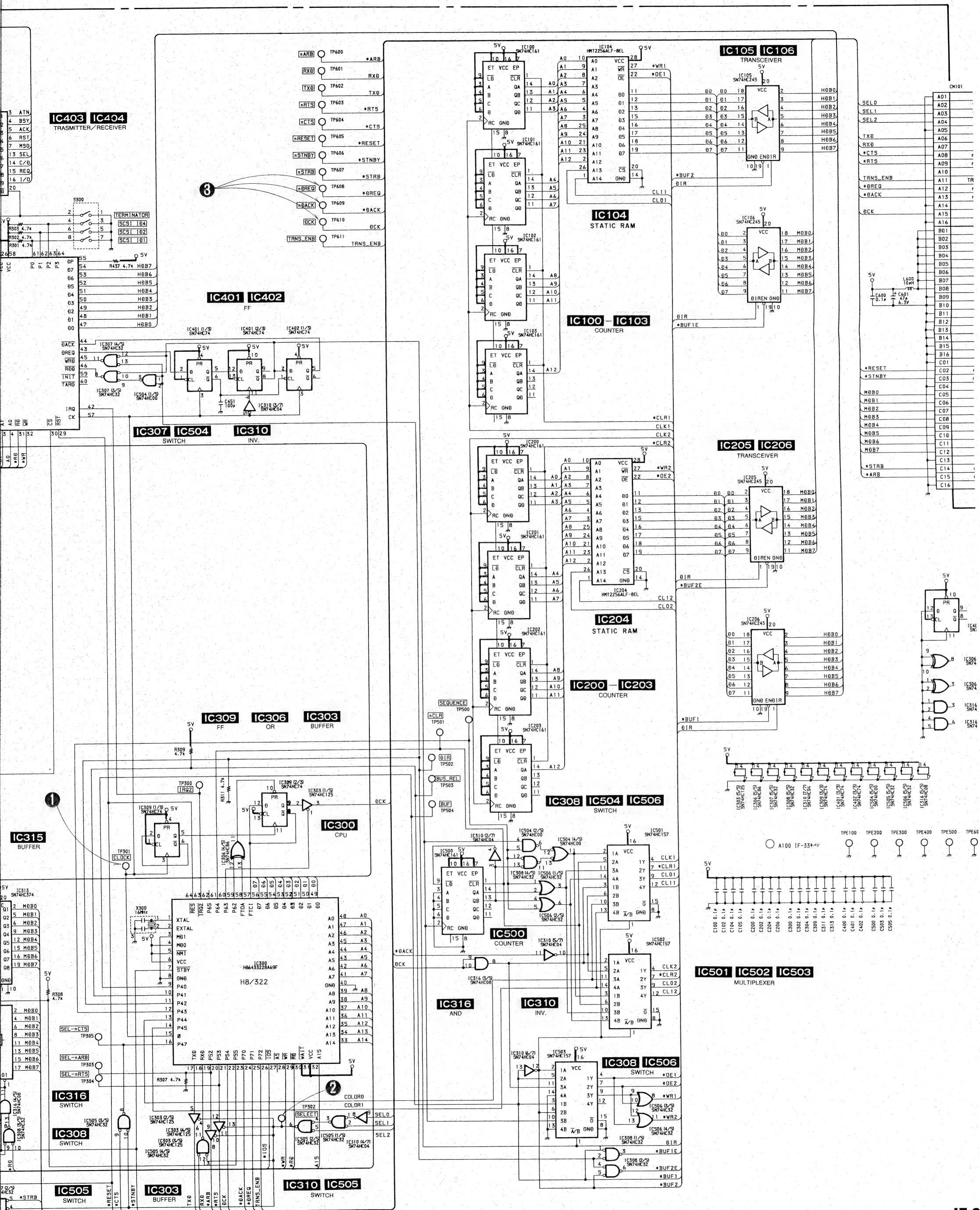
IF-33
1-654-971-11

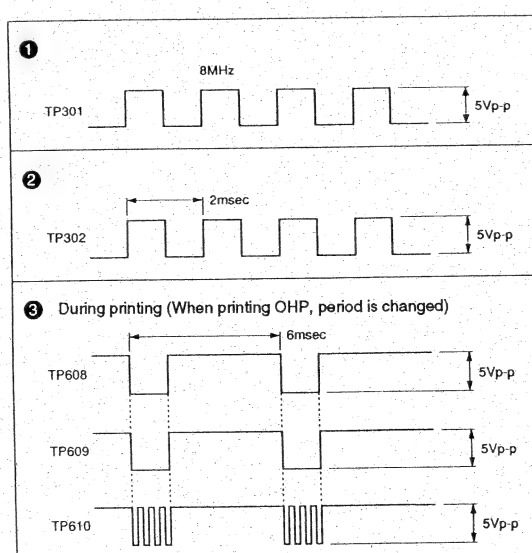
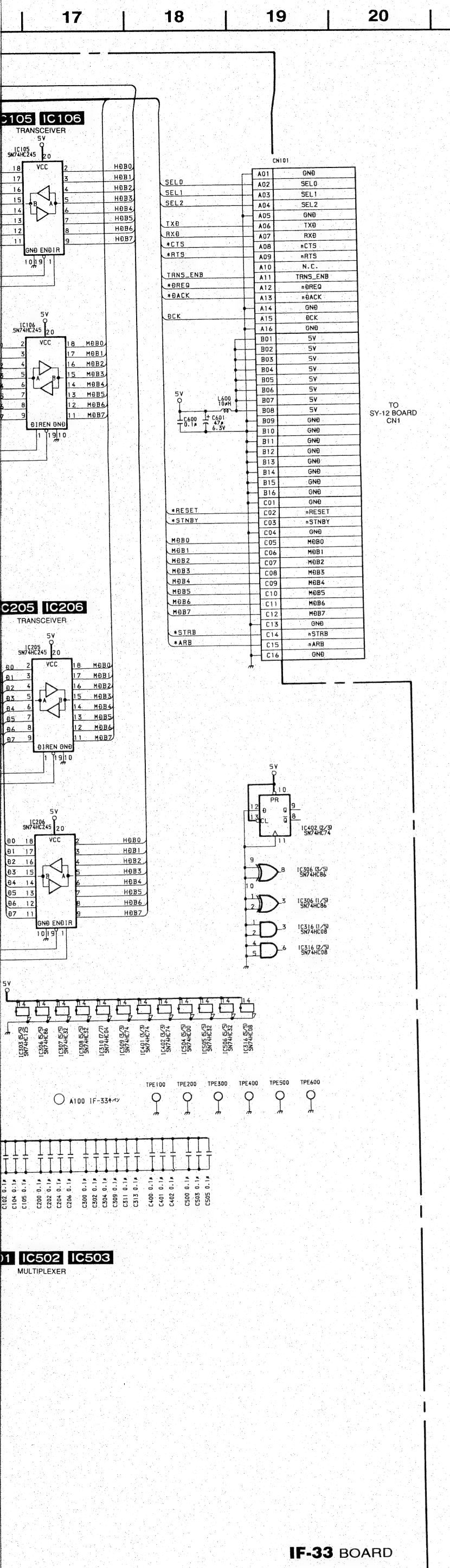


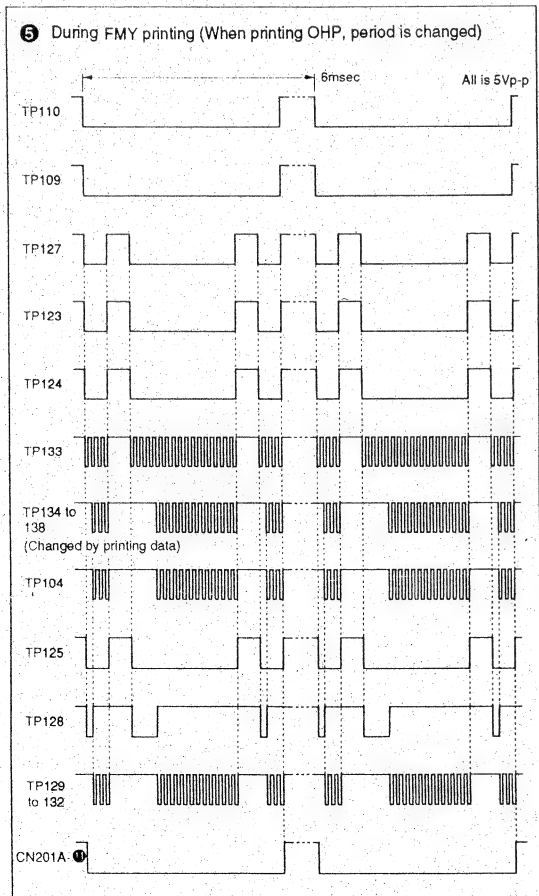
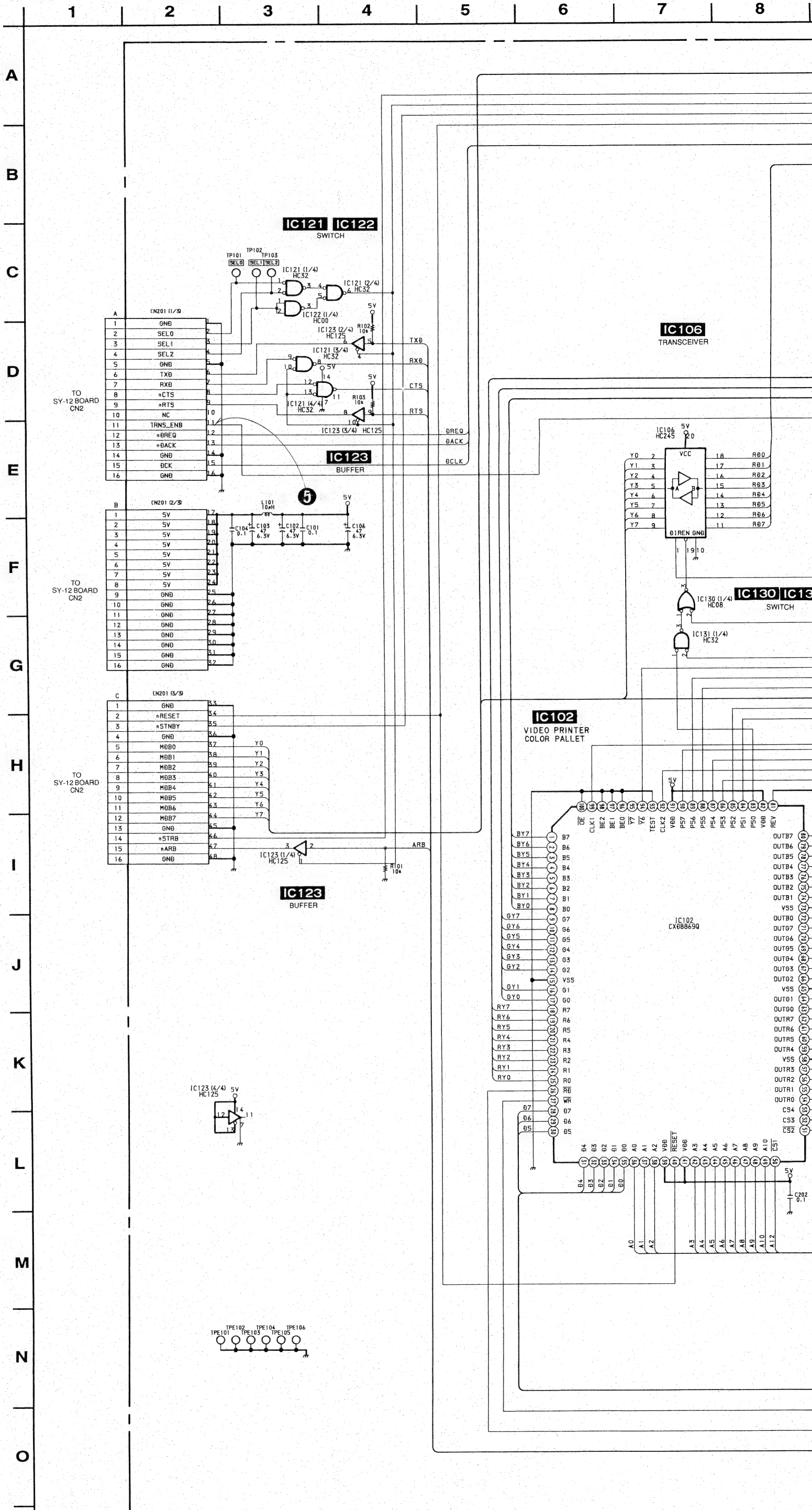
D400	D-5	L600	A-1
IC100	A-3	S300	J-6
IC101	B-3		
IC102	A-3	TPE200	D-3
IC103	B-3	TPE500	G-2
IC104	B-2		
IC105	C-2	X300	K-3
IC106	C-1		
IC200	C-3		
IC201	D-3		
IC202	C-3		
IC203	D-3		
IC204	C-2		
IC205	D-1		
IC206	D-2		
IC300	J-3		
IC301	G-2		
IC302	H-2		
IC303	K-1		
IC304	H-3		
IC305	G-3		
IC306	K-3		
IC307	F-4		
IC308	E-2		
IC309	J-4		
IC310	F-2		
IC311	H-4		
IC312	G-4		
IC313	G-2		
IC315	G-2		
IC316	F-2		
IC400	E-4		
IC401	G-4		
IC402	G-3		
IC403	D-5		
IC404	C-5		
IC500	E-3		
IC501	E-2		
IC502	E-2		
IC503	E-2		
IC504	F-3		
IC505	J-1		
IC506	E-3		

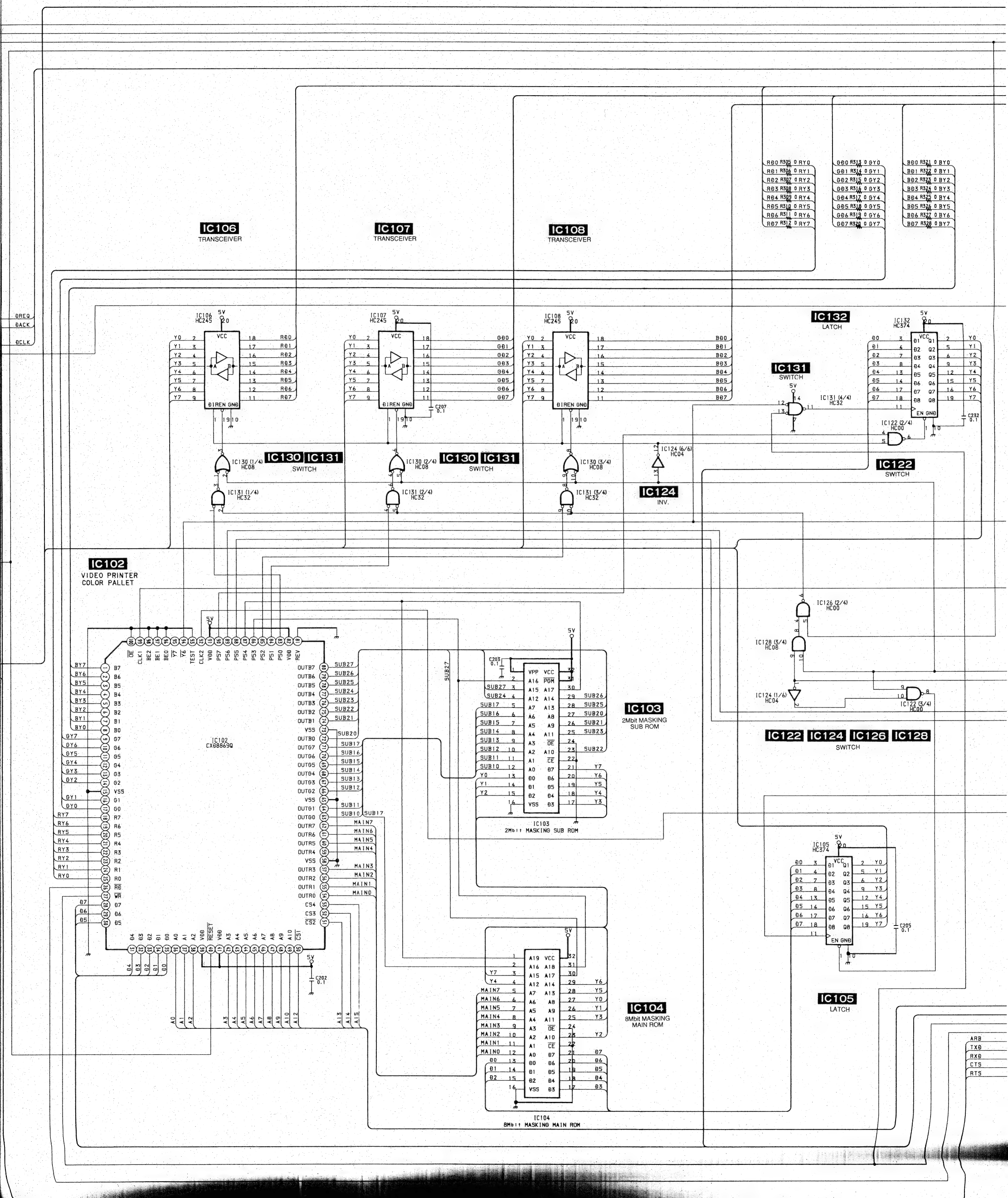
IF-33 (SCSI INTERFACE)

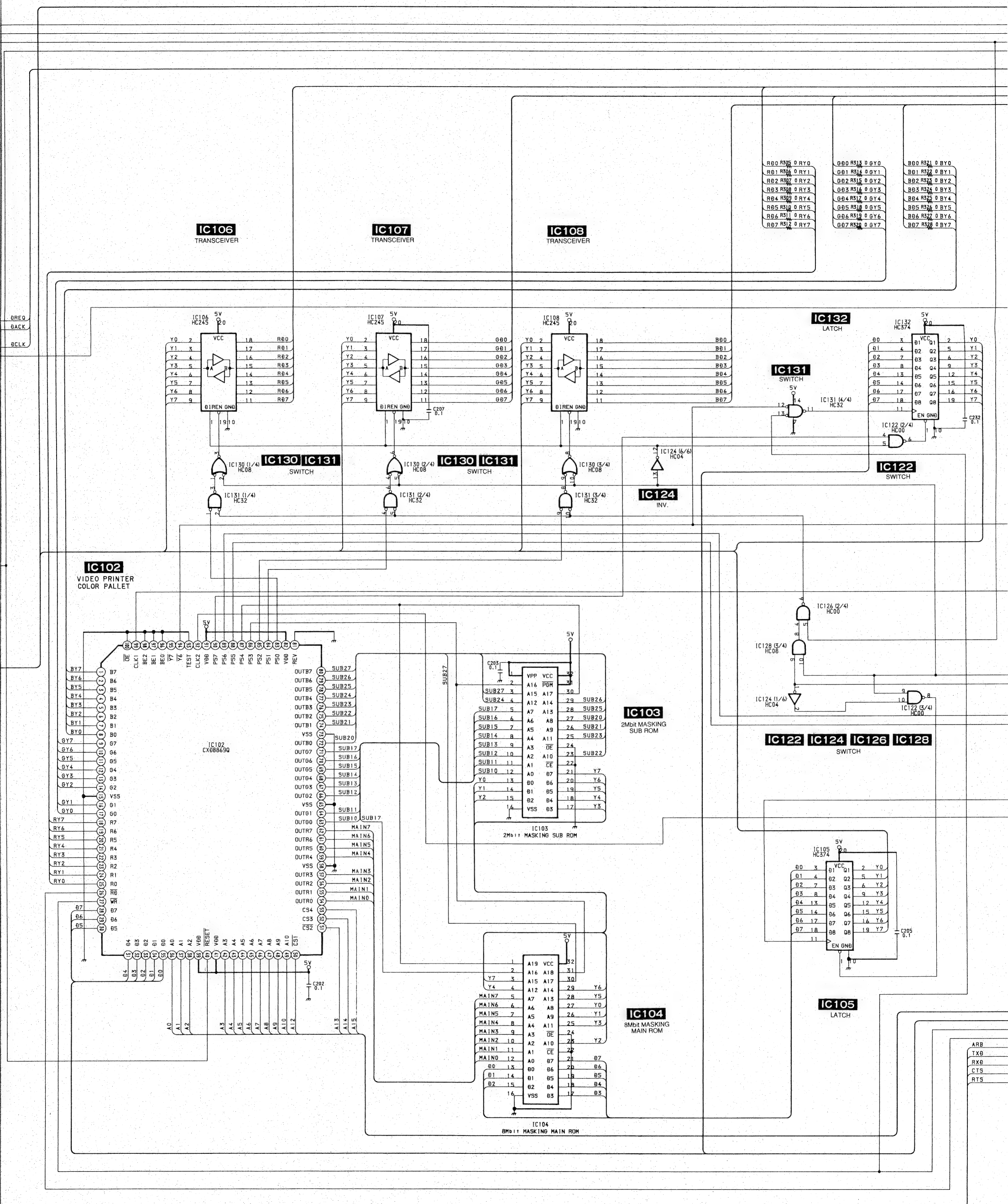




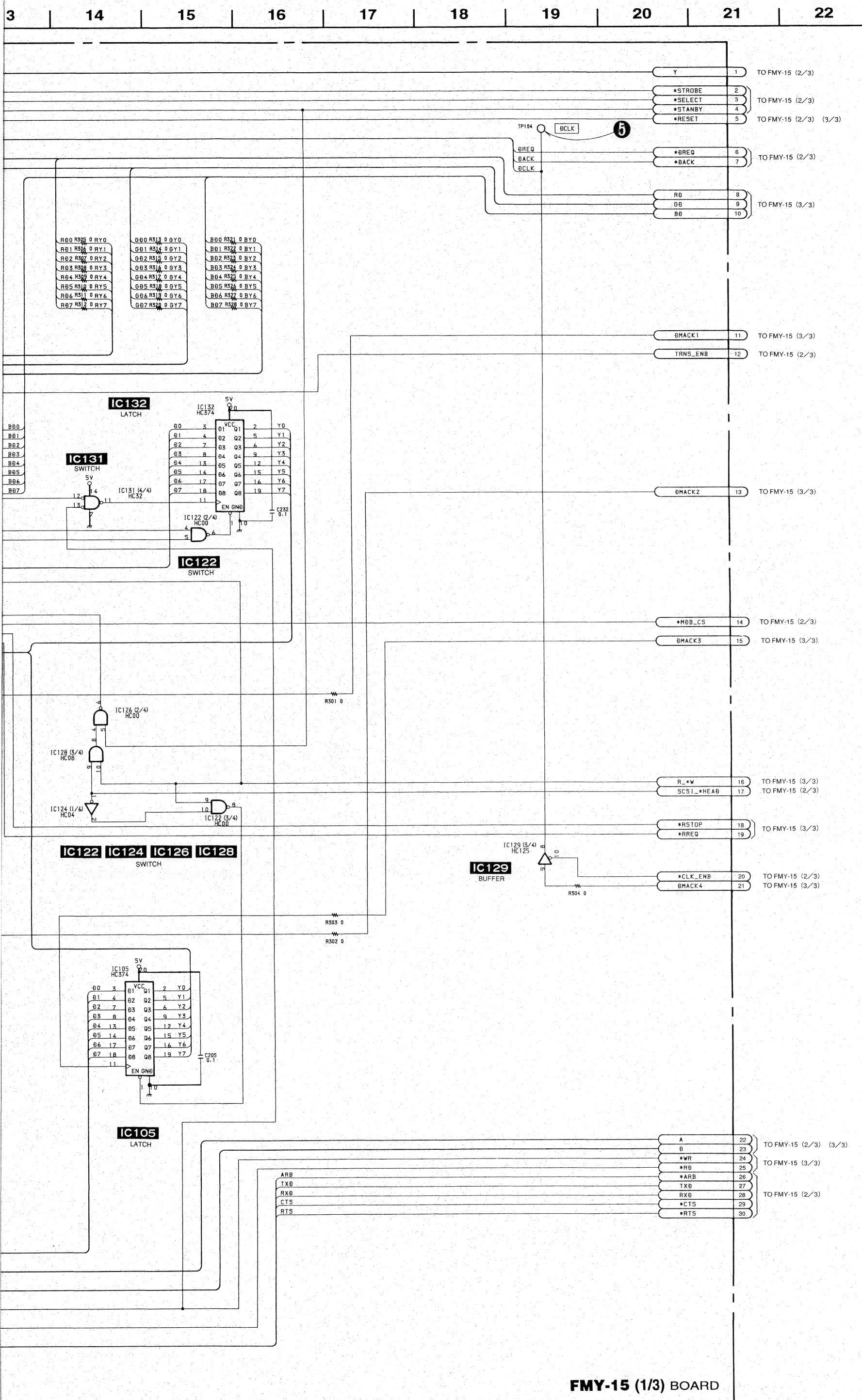




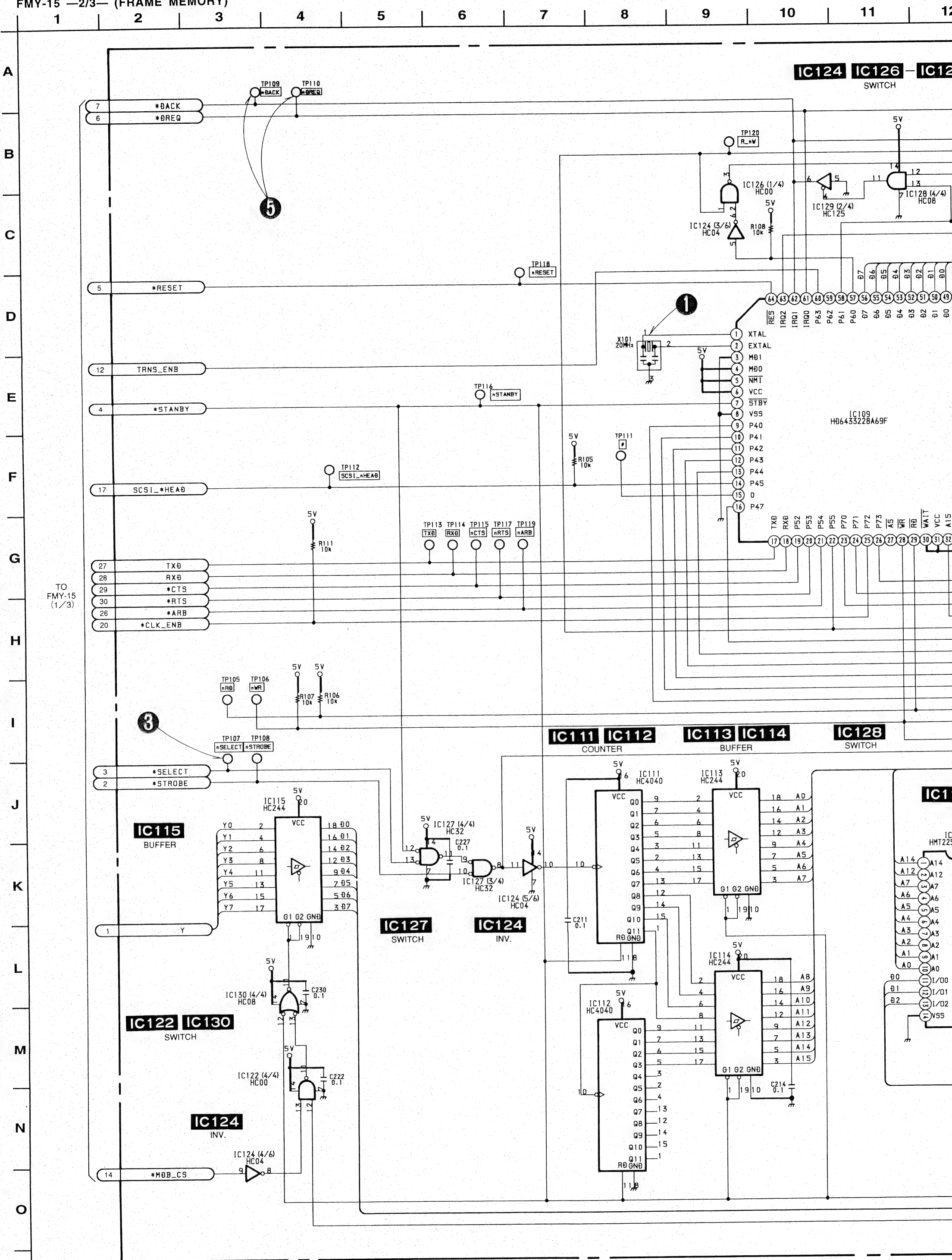






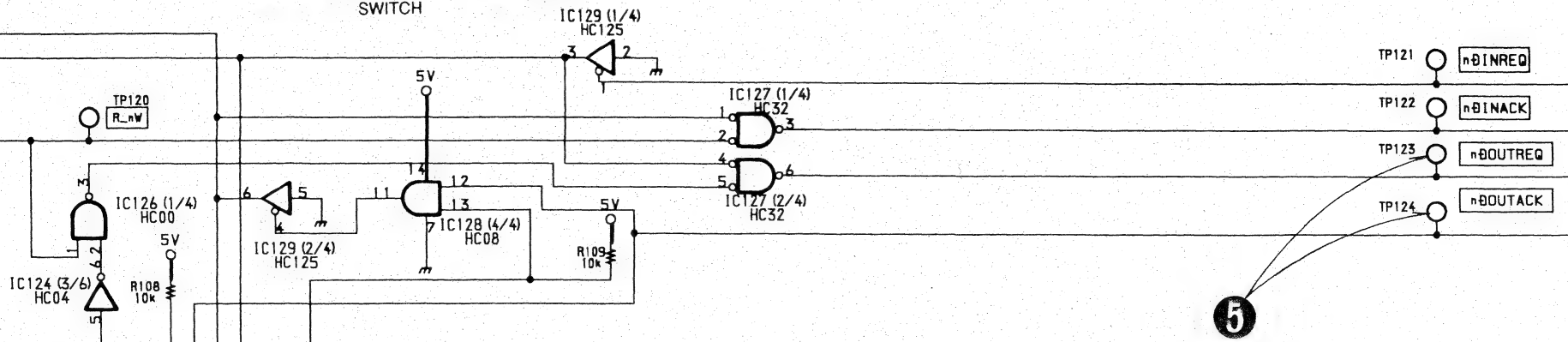


FMY-15 (1/3) BOARD



IC124 IC126 - IC129

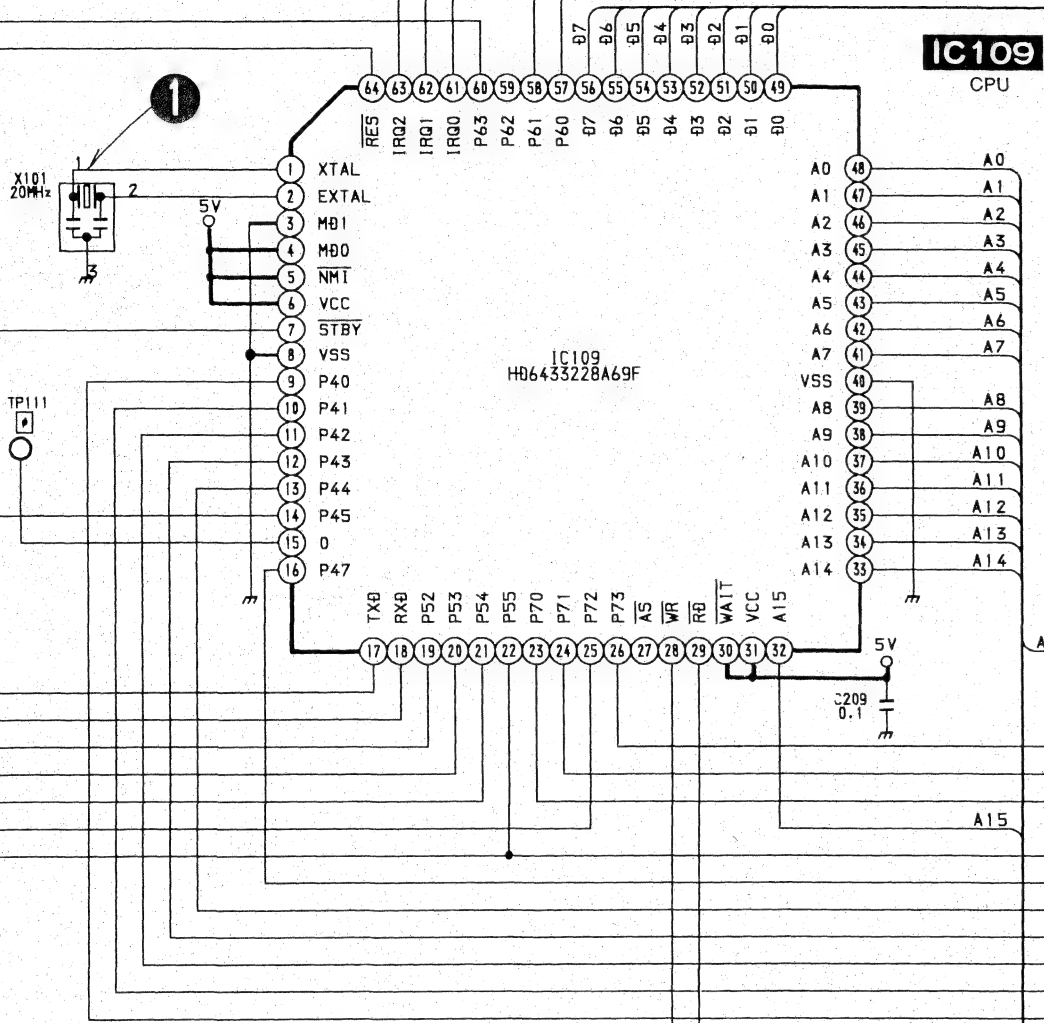
SWITCH



IC109

CPU

IC109
H06433228A69F



5

5

4 5

IC112

COUNTER

IC113 IC114

BUFFER

IC128

SWITCH

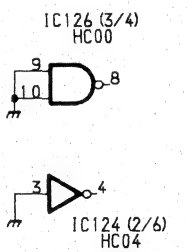
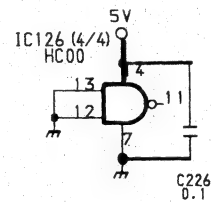
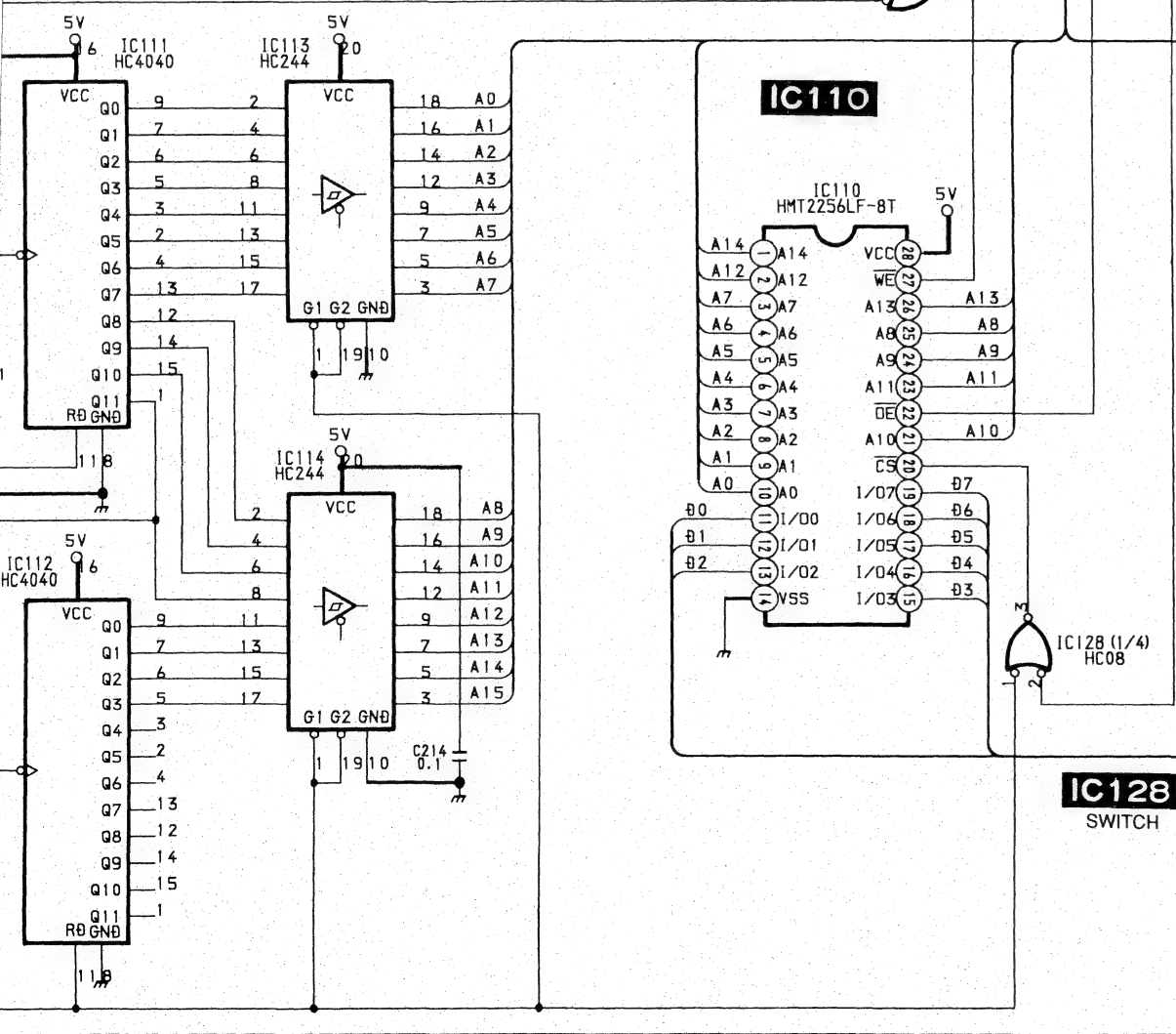
IC110

HMT2256LF-BT

IC128

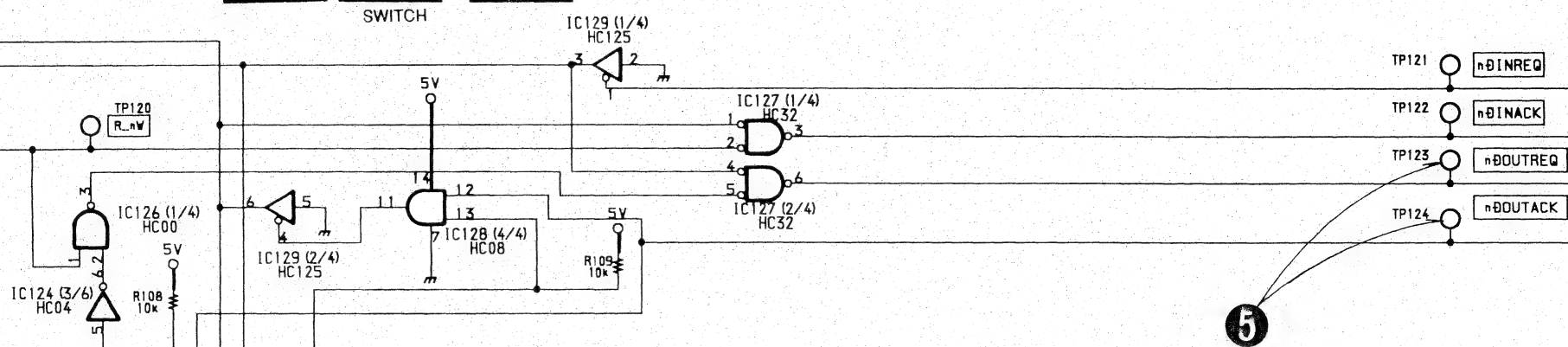
IC128

SWITCH



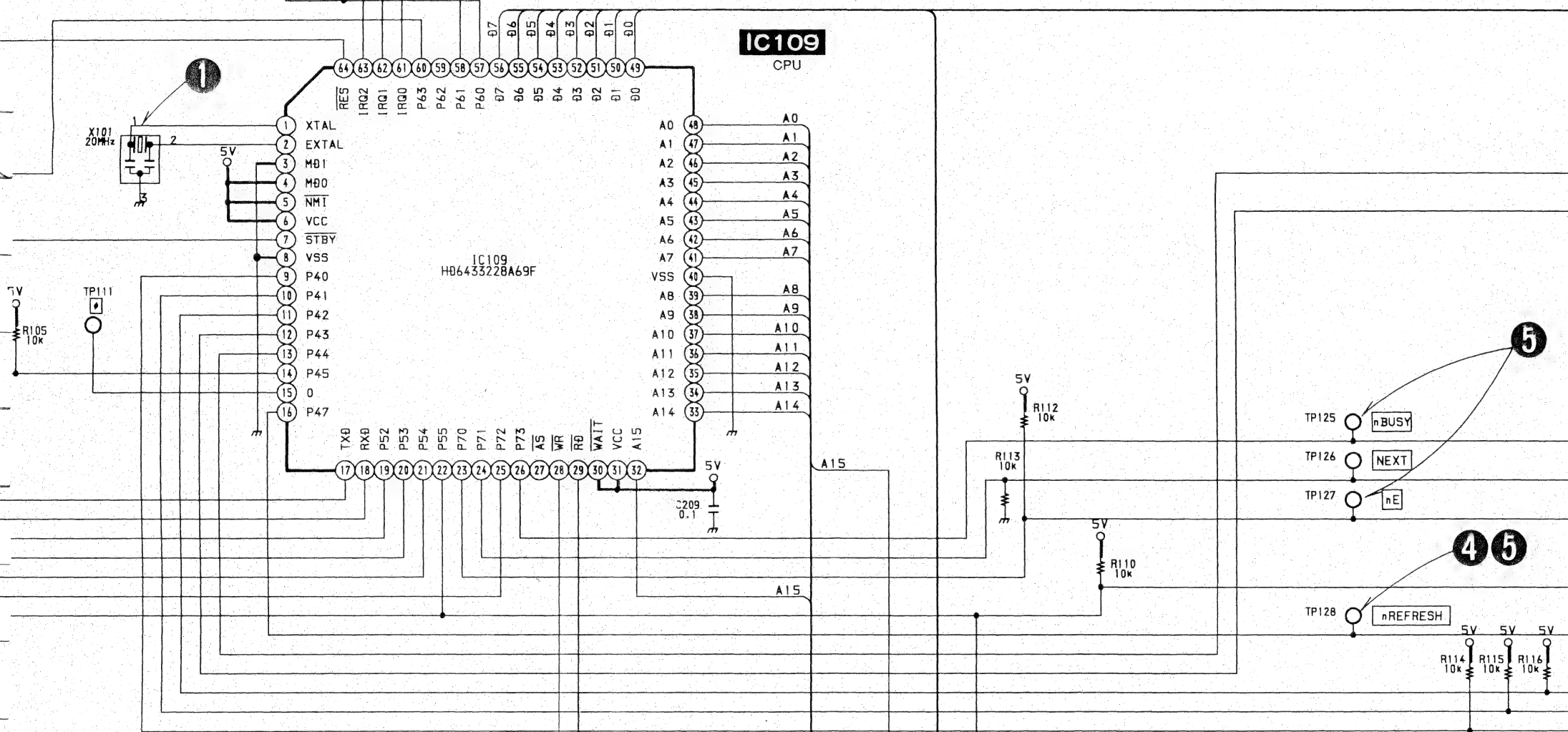
IC124 IC126 IC129

SWITCH



IC109

CPU

IC109
HD6433228A69F

IC111 IC112

COUNTER

IC113 IC114

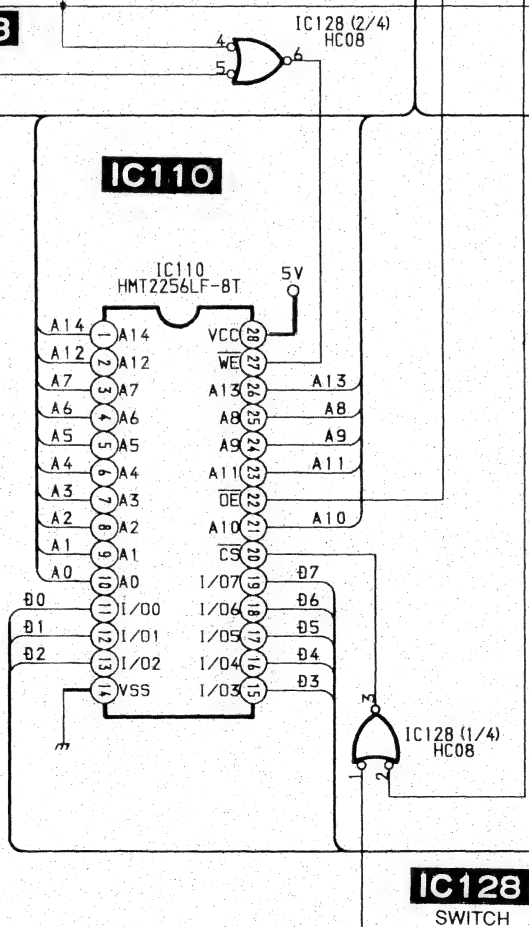
BUFFER

IC128

SWITCH

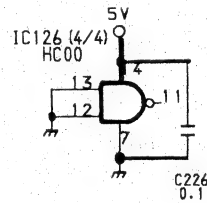
IC110

HMT2256LF-BT



IC128

SWITCH

IC126 (3/4)
HC00

9 8

10 11

12 13

14 15

16 17

18 19

20 21

22 23

24 25

26 27

28 29

30 31

32 33

34 35

36 37

38 39

40 41

42 43

44 45

46 47

48 49

50 51

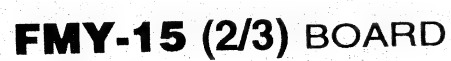
52 53

54 55

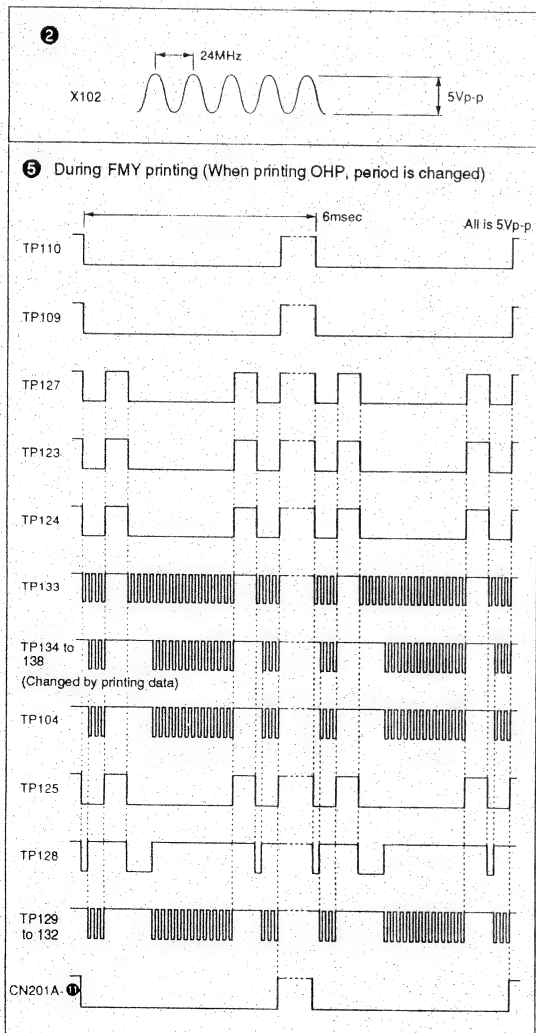
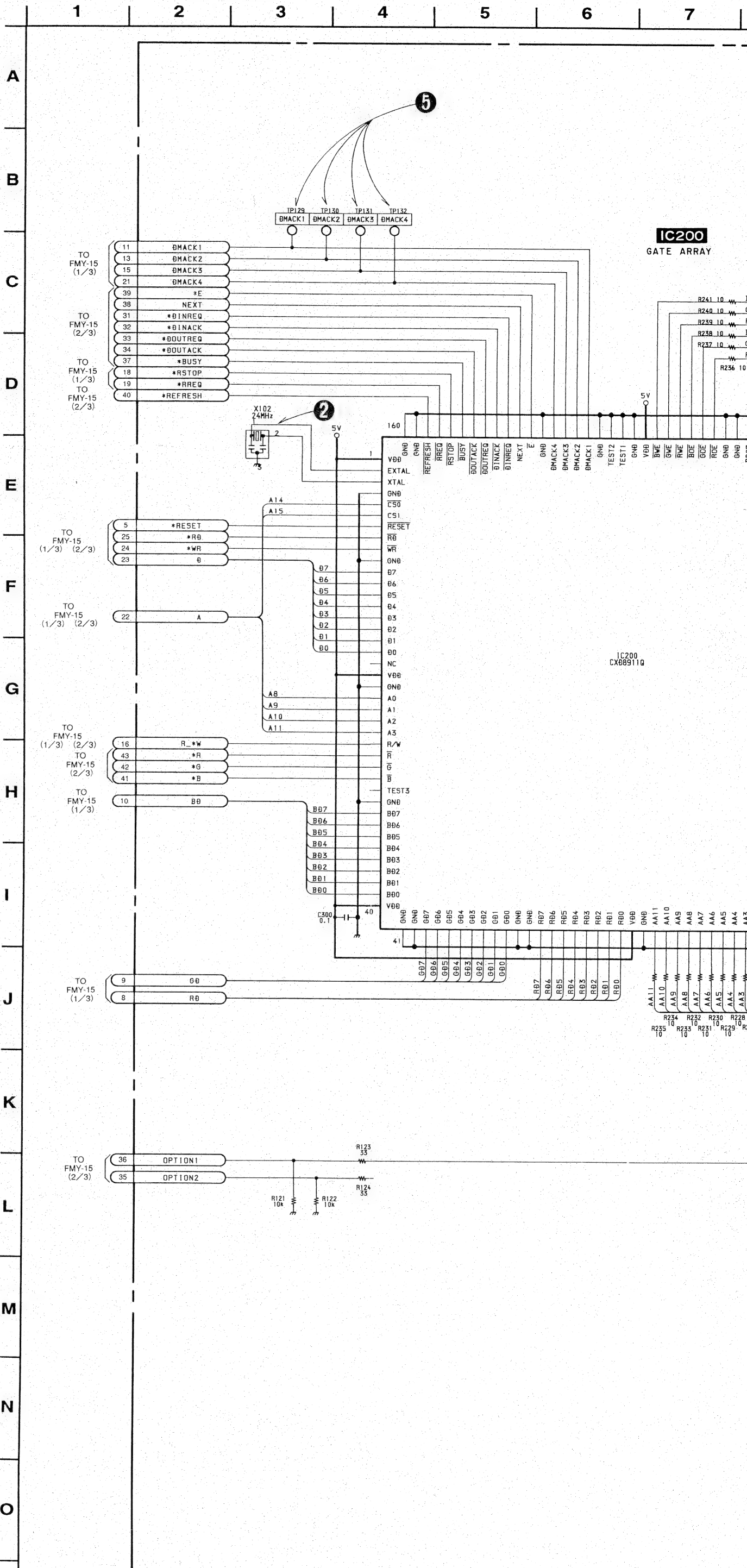
56 57

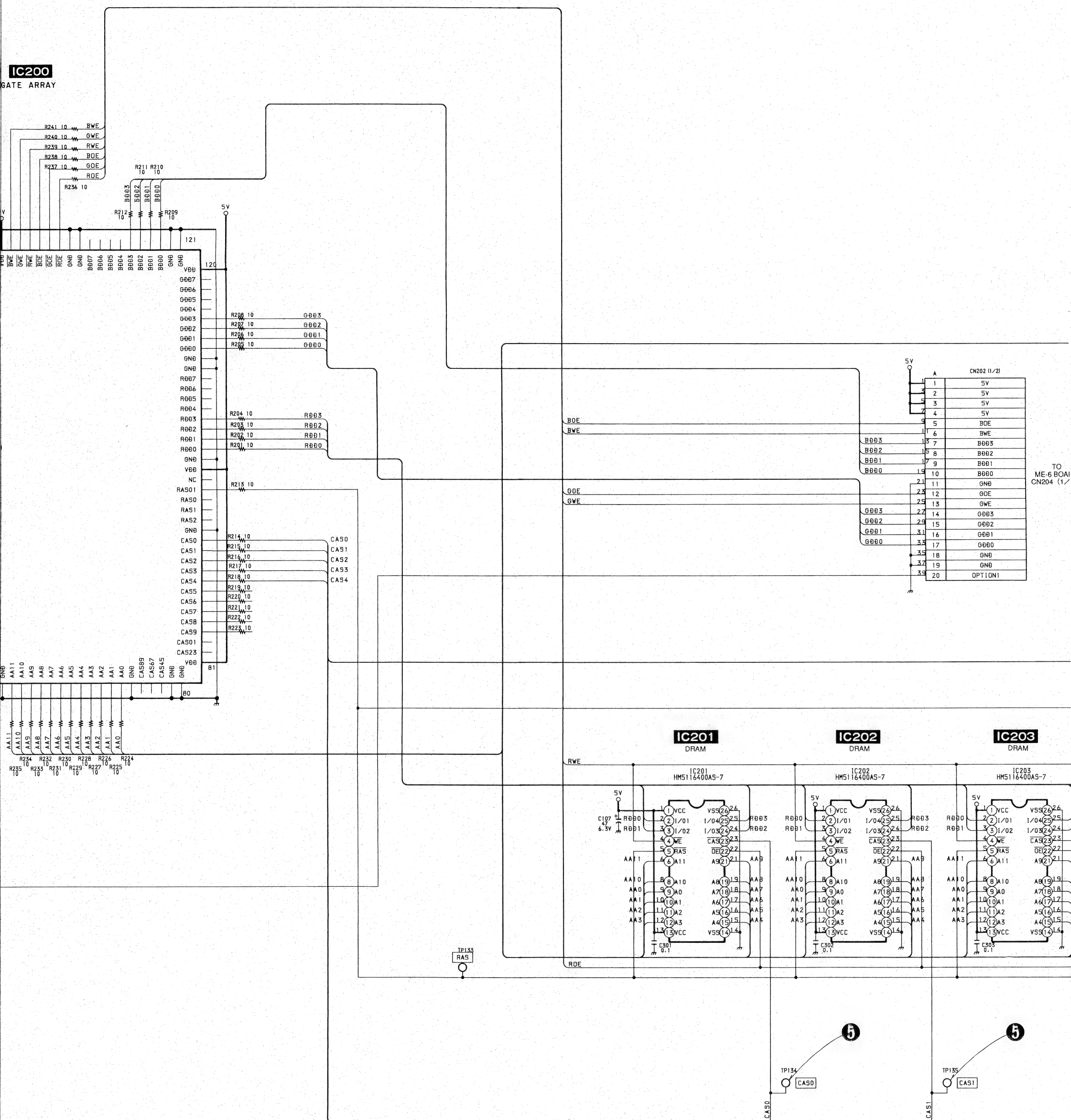
58 59

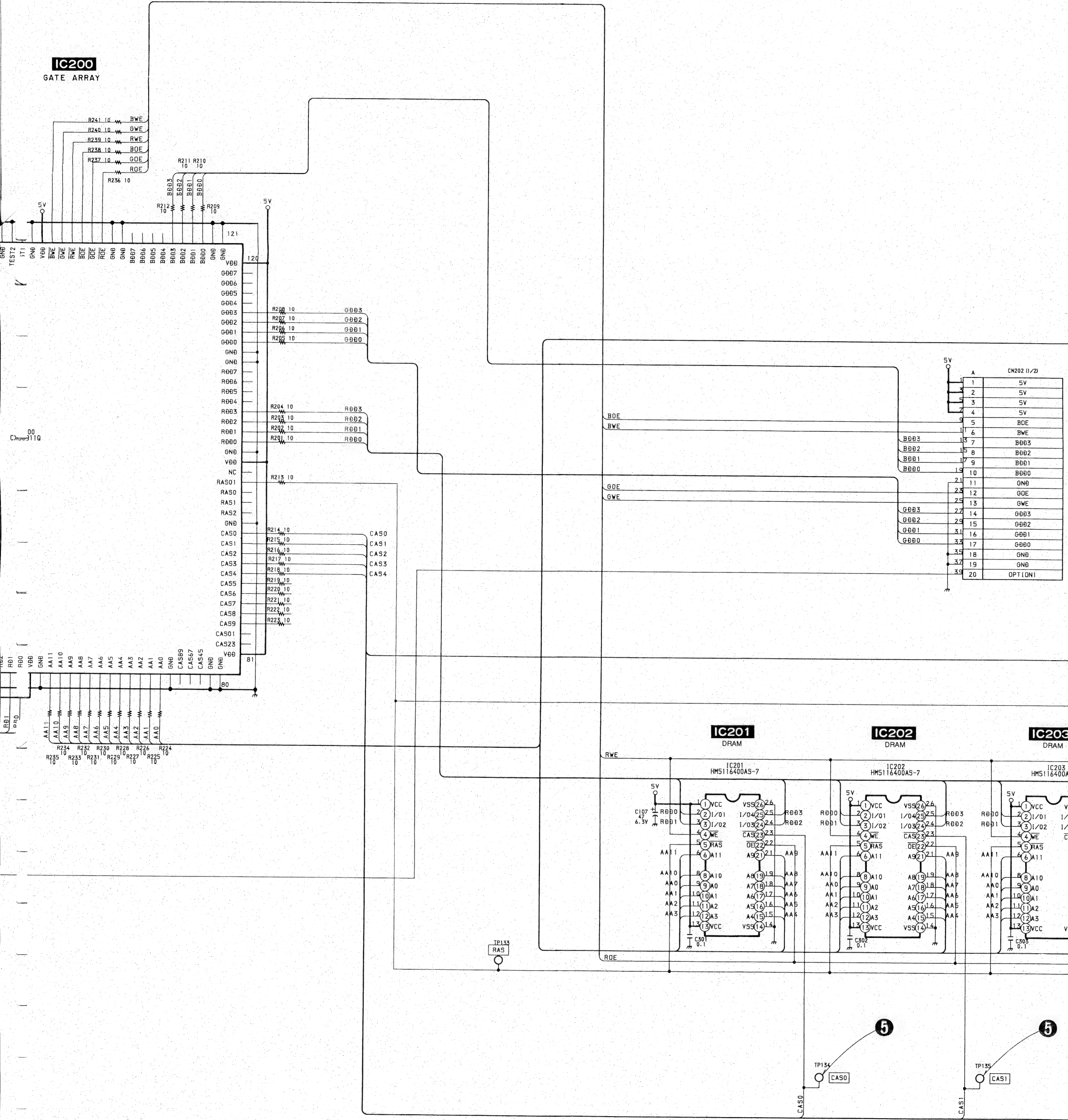
60 61

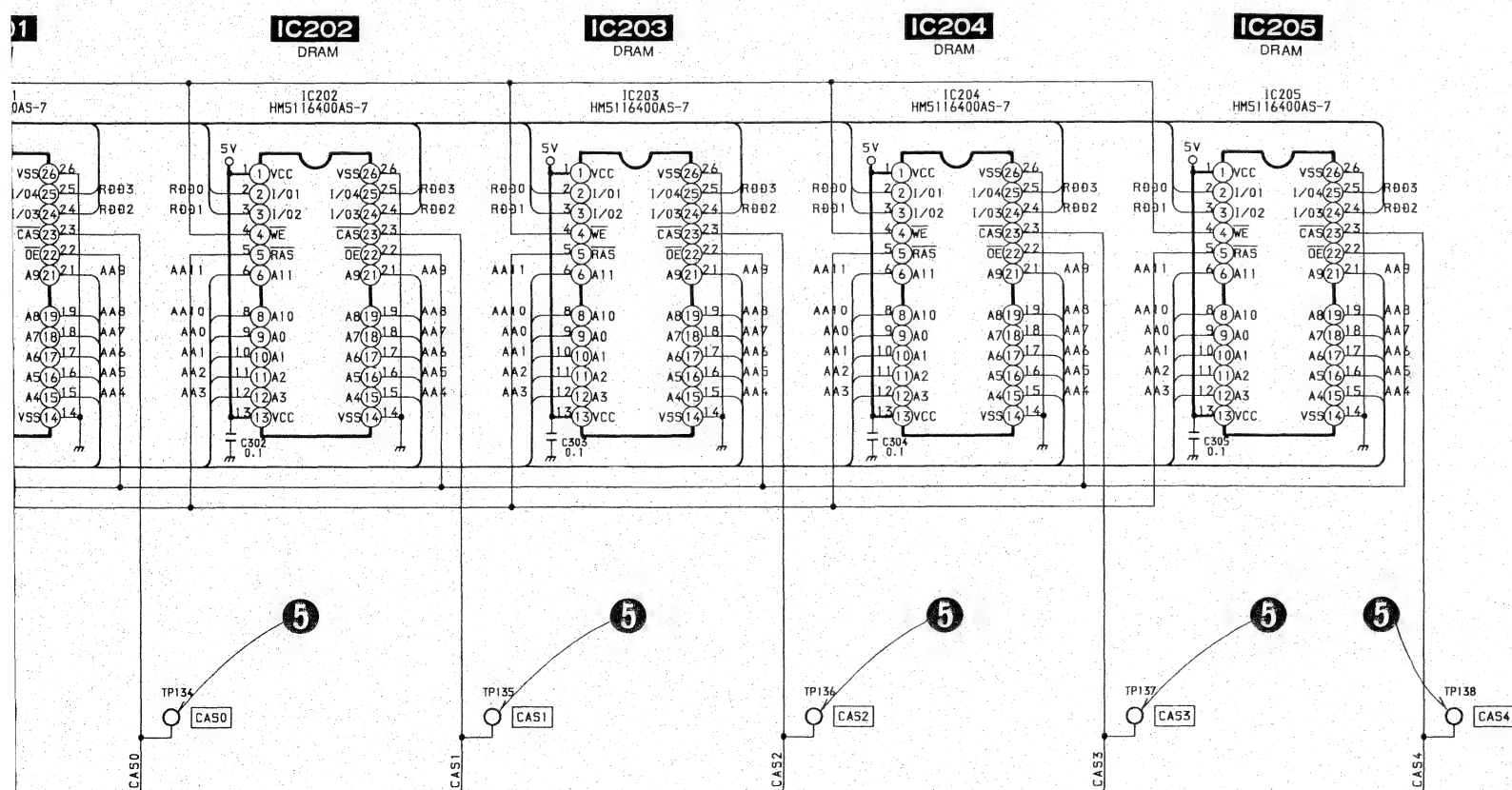
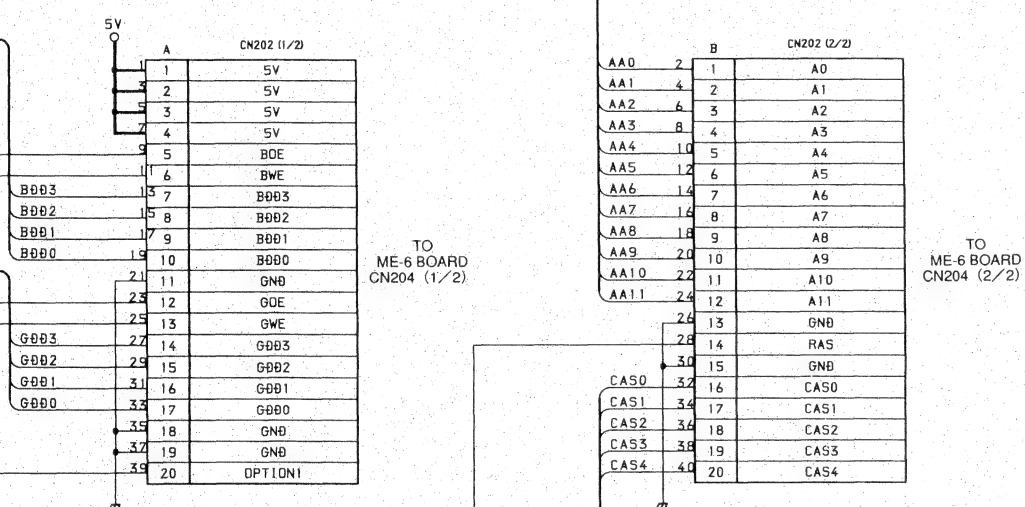


FMY-15 —3/3— (FRAME MEMORY)







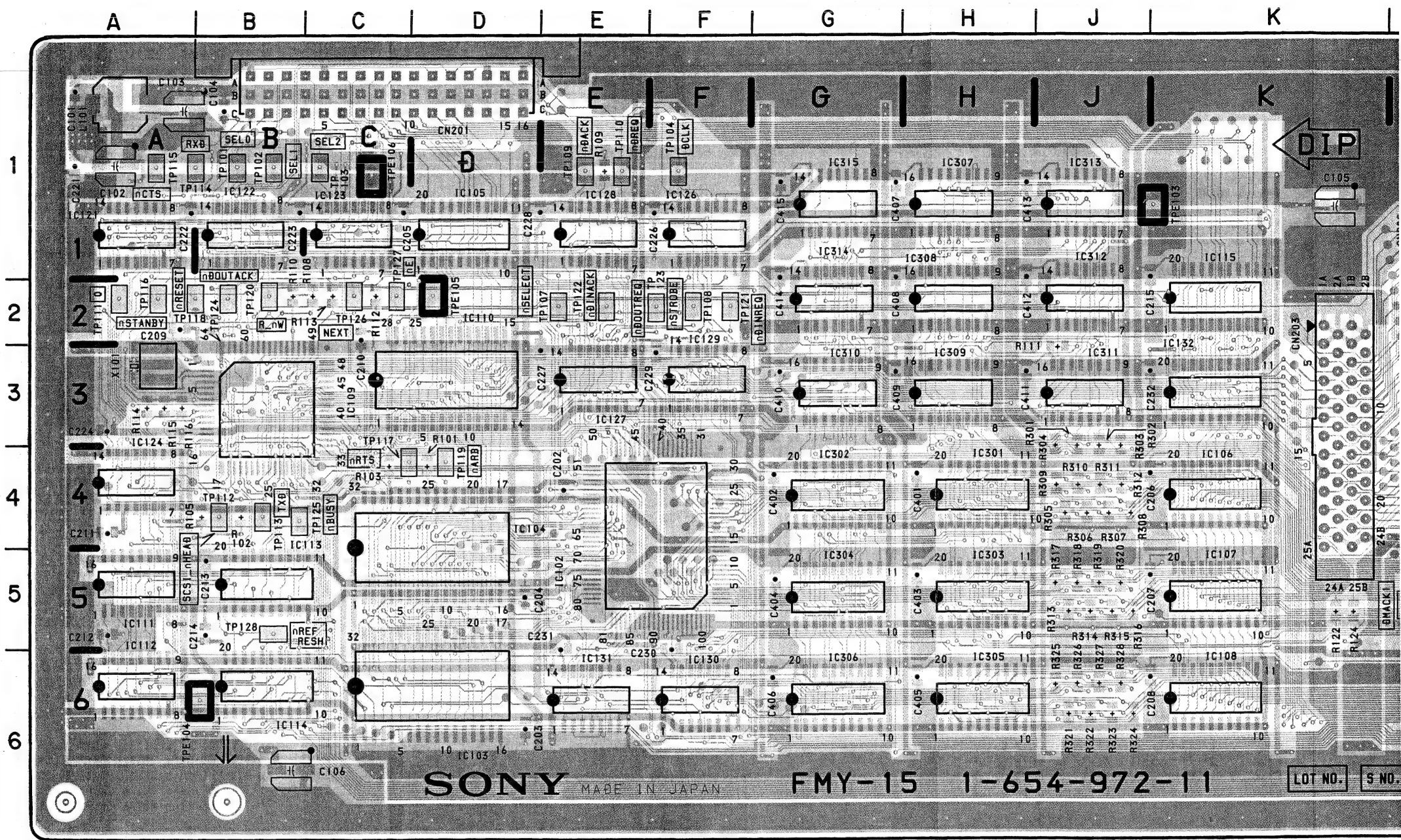


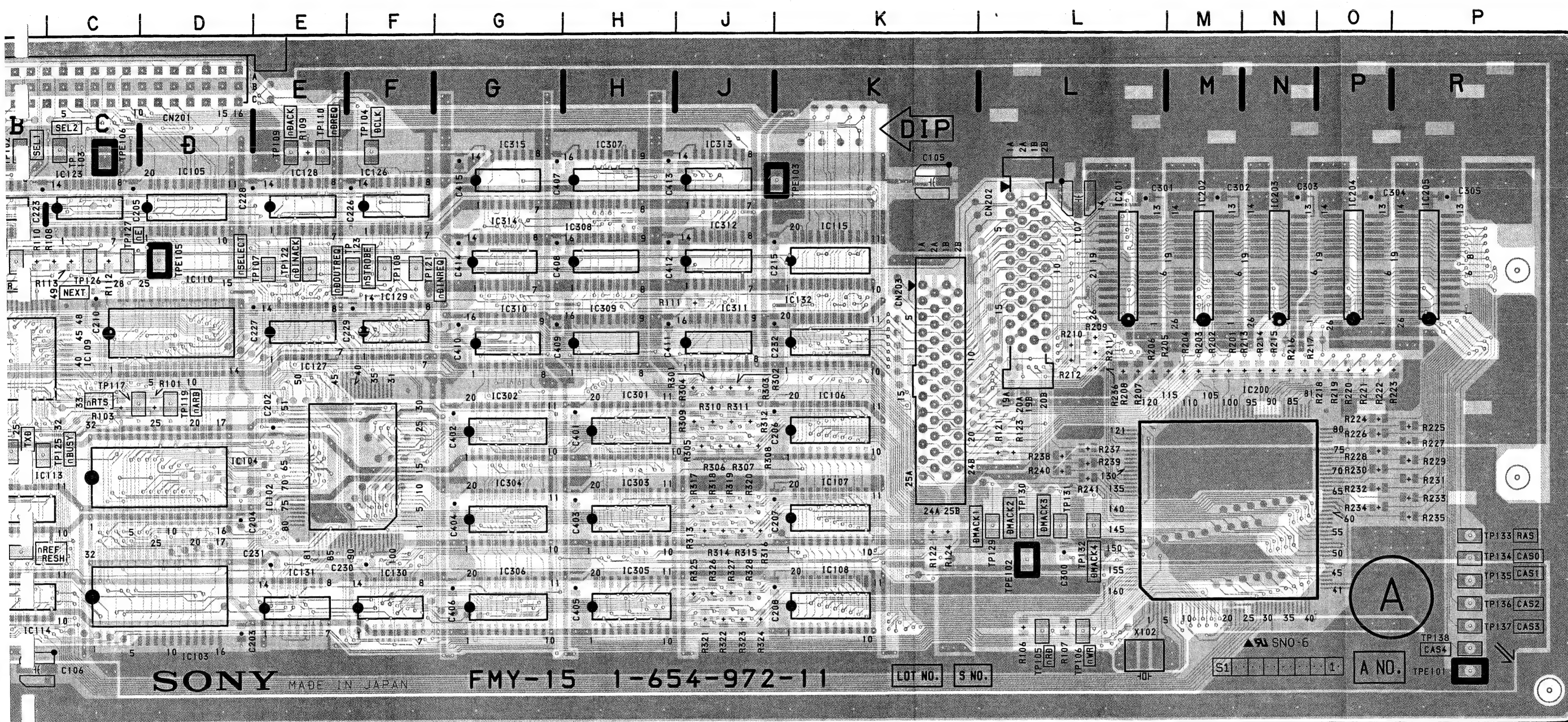
FMY-15 (3/3) BOARD

FMY-15 (FRAME MEMORY)

FMY-15 BOARD

IC102	E-4
IC103	D-6
IC104	D-4
IC105	D-1
IC106	K-4
IC107	K-5
IC108	K-6
IC109	C-3
IC110	D-3
IC111	A-5
IC112	A-6
IC113	B-5
IC114	B-6
IC115	K-2
IC121	A-1
IC122	B-1
IC123	C-1
IC124	A-4
IC126	F-1
IC127	E-3
IC128	E-1
IC129	F-3
IC130	F-6
IC131	E-6
IC132	K-3
IC200	N-4
IC201	L-1
IC202	M-1
IC203	N-1
IC204	P-1
IC205	R-1
L101	A-1





SECTION 4 EXPLODED VIEW

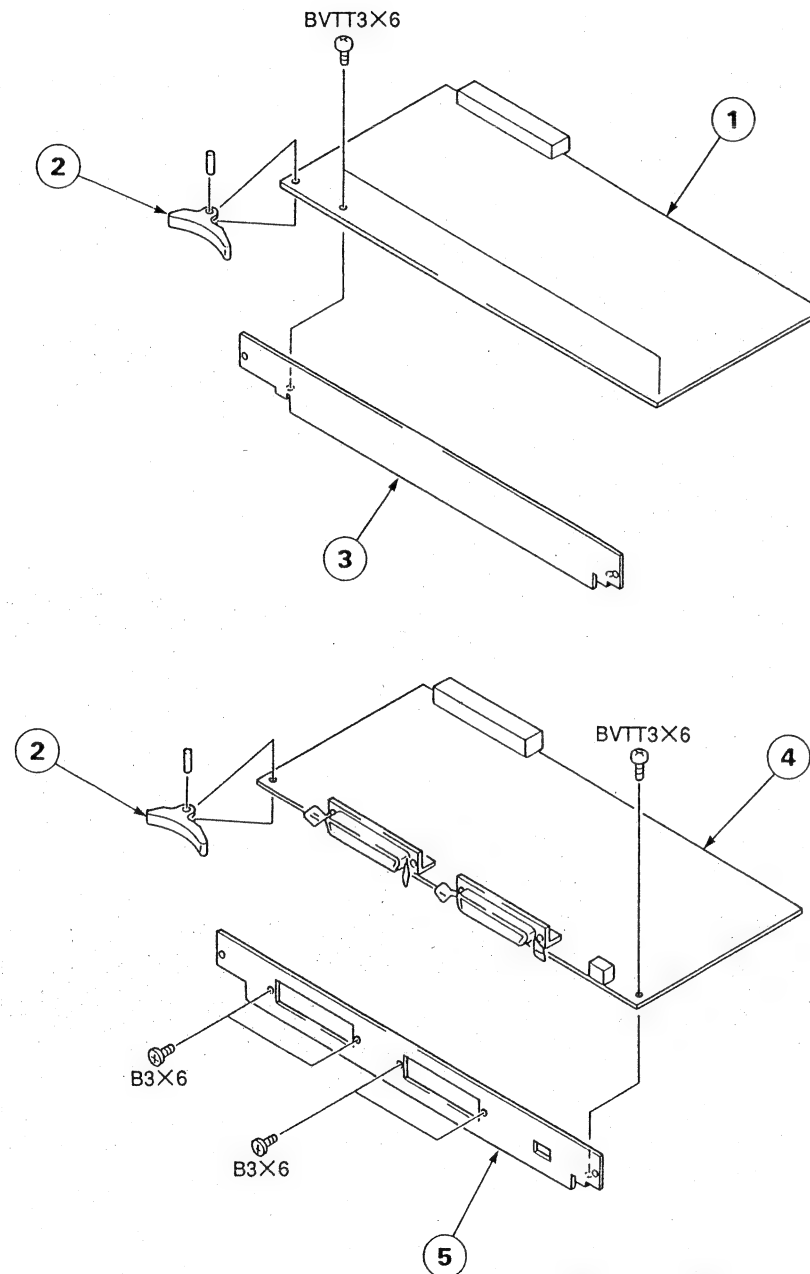
NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked "O" in the SP column are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

The components identified by shading and mark Δ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

4-1. UPK-8800SC (Option)



No.	Part No.	SP Description
1	1-654-972-11	PRINTED CIRCUIT BOARD, FMY-15
2	3-179-084-01	LEVER (R), PC BOARD
3	3-683-181-01	PANEL, FMY
4	1-654-971-11	PRINTED CIRCUIT BOARD, IF-33
5	3-683-180-01	PANEL, IF

SECTION 5 ELECTRICAL PARTS LIST

NOTE:

- Items marked "O" in the SP column are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise stated.

When indicating part by reference number, please include the board name.

- RESISTORS**
- All resistors are in ohms.
 - F: non-flammable
- CAPACITORS**
- MF: μ F, PF: μ F
- COILS**
- MMH: mH, UH: μ H

The components identified by shading and mark Δ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

FMY-15 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-654-972-11	PRINTED CIRCUIT BOARD, FMY-15
1pc	3-179-084-01	LEVER (R), PC BOARD
1pc	3-683-181-01	PANEL, FMY
2pcs	7-685-871-01	SCREW +BVTT 3X6 (S)

<CAPACITOR>

C101	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C102	1-126-391-11	ELECT, CHIP 47 μ F 20% 6.3V
C103	1-126-391-11	ELECT, CHIP 47 μ F 20% 6.3V
C104	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C106	1-126-391-11	ELECT, CHIP 47 μ F 20% 6.3V
C107	1-126-391-11	ELECT, CHIP 47 μ F 20% 6.3V
C202	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C203	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C205	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C207	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C209	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C211	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C214	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C222	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C226	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C227	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C230	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C232	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C300	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C301	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C302	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C303	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C304	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V
C305	1-163-038-91	CERAMIC, CHIP 0.1 μ F 25V

<CONNECTOR>

CN201	1-569-465-11	PIN, DIN CONNECTOR (DIP) 48P
CN202	1-766-196-11	CONNECTOR, BOARD TO BOARD 40P

<IC>

IC102	8-759-194-80	IC CXD8869Q
IC103	8-759-332-28	IC 27C2001-FMY15SV1.0
IC104	8-759-332-31	IC 27C8001-FMY15MV1.0
IC105	8-759-926-67	IC SN74HC374ANS
IC106	8-759-926-49	IC SN74HC245ANS
IC107	8-759-926-49	IC SN74HC245ANS
IC108	8-759-926-49	IC SN74HC245ANS
IC109	8-759-327-83	IC HD6433228A69F
IC110	8-759-327-82	IC HMT2256ALF8EL

(FMY-15 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
IC111	8-759-926-98	IC SN74HC4040ANS
IC112	8-759-926-98	IC SN74HC4040ANS
IC113	8-759-926-48	IC SN74HC244ANS
IC114	8-759-926-48	IC SN74HC244ANS
IC115	8-759-926-48	IC SN74HC244ANS

IC121	8-759-925-85	IC SN74HC32ANS
IC122	8-759-927-46	IC SN74HC00ANS
IC123	8-759-926-05	IC SN74HC125ANS
IC124	8-759-925-74	IC SN74HC04ANS
IC126	8-759-927-46	IC SN74HC00ANS

IC127	8-759-925-85	IC SN74HC32ANS
IC128	8-759-925-76	IC SN74HC08ANS
IC129	8-759-926-05	IC SN74HC125ANS
IC130	8-759-925-76	IC SN74HC08ANS
IC131	8-759-925-85	IC SN74HC32ANS

IC132	8-759-926-67	IC SN74HC374ANS
IC200	8-759-508-87	IC CXD8911Q
IC201	8-759-332-65	IC HM5116400AS7GSEL
IC202	8-759-332-65	IC HM5116400AS7GSEL
IC203	8-759-332-65	IC HM5116400AS7GSEL

IC204	8-759-332-65	IC HM5116400AS7GSEL
IC205	8-759-332-65	IC HM5116400AS7GSEL

<COIL>

L101	1-424-653-11	COIL, CHOKE 10UH
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<RESISTOR>

R101	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R102	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R103	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R105	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R106	1-216-073-00	METAL, CHIP 10K 5% 1/10W

R107	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R108	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R109	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R110	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R111	1-216-073-00	METAL, CHIP 10K 5% 1/10W

R112	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R113	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R114	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R115	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R116	1-216-073-00	METAL, CHIP 10K 5% 1/10W

R121	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R122	1-216-073-00	METAL, CHIP 10K 5% 1/10W

(FMY-15 BO)

Ref. No. or Q'ty	Pc
R123	1-
R124	1-
R201	1-
R202	1-
R203	1-
R204	1-
R205	1-
R206	1-
R207	1-
R208	1-
R209	1-
R210	1-
R211	1-
R212	1-
R213	1-
R214	1-
R215	1-
R216	1-
R217	1-
R218	1-
R219	1-
R220	1-
R221	1-
R222	1-
R223	1-
R224	1-
R225	1-
R226	1-
R227	1-
R228	1-
R229	1-
R230	1-
R231	1-
R232	1-
R233	1-
R234	1-
R235	1-
R236	1-
R237	1-
R238	1-
R239	1-
R240	1-
R241	1-
R301	1-
R302	1-
R303	1-
R304	1-
R305	1-
R306	1-
R307	1-
R308	1-
R309	1-
R310	1-
R311	1-
R312	1-
R313	1-
R314	1-
R315	1-
R316	1-
R317	1-

SECTION 5

ELECTRICAL PARTS LIST

NOTE:

• Items marked "O" in the SP column are not stocked since they are seldom required for routine service.
Some delay should be anticipated when ordering these items.

• All variable and adjustable resistors have characteristic curve B, unless otherwise stated.

When indicating part by reference number, please include the board name.

RESISTORS

- All resistors are in ohms.
- F: non-flammable

CAPACITORS

• MF: μ F, PF: μ F

COILS

• MMH: mH, UH: μ H

The components identified by shading and mark Δ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

FMY-15 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-654-972-11	PRINTED CIRCUIT BOARD, FMY-15
1pc	3-179-084-01	LEVER (R), PC BOARD
1pc	3-683-181-01	PANEL, FMY
2pcs	7-685-871-01	SCREW +BVT 3X6 (S)

<CAPACITOR>

C101	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C102	1-126-391-11	ELECT, CHIP 47uF 20% 6.3V
C103	1-126-391-11	ELECT, CHIP 47uF 20% 6.3V
C104	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C106	1-126-391-11	ELECT, CHIP 47uF 20% 6.3V
C107	1-126-391-11	ELECT, CHIP 47uF 20% 6.3V
C202	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C203	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C205	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C207	1-163-038-91	CERAMIC, CHIP 0.1uF 25V

C209	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C211	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C214	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C222	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C226	1-163-038-91	CERAMIC, CHIP 0.1uF 25V

C227	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C230	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C232	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C300	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C301	1-163-038-91	CERAMIC, CHIP 0.1uF 25V

C302	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C303	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C304	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C305	1-163-038-91	CERAMIC, CHIP 0.1uF 25V

<CONNECTOR>

CN201	1-569-465-11	PIN, DIN CONNECTOR (DIP) 48P
CN202	1-766-196-11	CONNECTOR, BOARD TO BOARD 40P

<IC>

IC102	8-759-194-80	IC CXD8869Q
IC103	8-759-332-28	IC 27C2001-FMY15SV1.0
IC104	8-759-332-31	IC 27C8001-FMY15MV1.0
IC105	8-759-926-67	IC SN74HC374ANS
IC106	8-759-926-49	IC SN74HC245ANS

IC107	8-759-926-49	IC SN74HC245ANS
IC108	8-759-926-49	IC SN74HC245ANS
IC109	8-759-327-83	IC HD6433228A69F
IC110	8-759-327-82	IC HMT2256ALF8EL

(FMY-15 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
IC111	8-759-926-98	IC SN74HC4040ANS
IC112	8-759-926-98	IC SN74HC4040ANS
IC113	8-759-926-05	IC SN74HC244ANS
IC114	8-759-926-48	IC SN74HC244ANS
IC115	8-759-926-48	IC SN74HC244ANS

IC121	8-759-925-85	IC SN74HC32ANS
IC122	8-759-927-46	IC SN74HC00ANS
IC123	8-759-926-05	IC SN74HC125ANS
IC124	8-759-925-74	IC SN74HC04ANS
IC126	8-759-927-46	IC SN74HC00ANS

IC127	8-759-925-85	IC SN74HC32ANS
IC128	8-759-925-76	IC SN74HC08ANS
IC129	8-759-926-05	IC SN74HC125ANS
IC130	8-759-925-76	IC SN74HC08ANS
IC131	8-759-925-85	IC SN74HC32ANS

IC132	8-759-926-67	IC SN74HC374ANS
IC200	8-759-508-87	IC CXD8911Q
IC201	8-759-332-65	IC HM5116400AS7GSEL
IC202	8-759-332-65	IC HM5116400AS7GSEL
IC203	8-759-332-65	IC HM5116400AS7GSEL

IC204	8-759-332-65	IC HM5116400AS7GSEL
IC205	8-759-332-65	IC HM5116400AS7GSEL

<COIL>

L101	1-424-653-11	COIL, CHOKE 10UH
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<RESISTOR>

R101	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R102	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R103	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R105	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R106	1-216-073-00	METAL, CHIP 10K 5% 1/10W

R107	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R108	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R109	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R110	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R111	1-216-073-00	METAL, CHIP 10K 5% 1/10W

R112	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R113	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R114	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R115	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R116	1-216-073-00	METAL, CHIP 10K 5% 1/10W

R121	1-216-073-00	METAL, CHIP 10K 5% 1/10W
R122	1-216-073-00	METAL, CHIP 10K 5% 1/10W

(FMY-15 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R123	1-216-013-00	METAL, CHIP 33 5% 1/10W
R124	1-216-013-00	METAL, CHIP 33 5% 1/10W
R201	1-216-001-00	METAL, CHIP 10 5% 1/10W
R202	1-216-001-00	METAL, CHIP 10 5% 1/10W
R203	1-216-001-00	METAL, CHIP 10 5% 1/10W

R204	1-216-001-00	METAL, CHIP 10 5% 1/10W
R205	1-216-001-00	METAL, CHIP 10 5% 1/10W
R206	1-216-001-00	METAL, CHIP 10 5% 1/10W
R207	1-216-001-00	METAL, CHIP 10 5% 1/10W
R208	1-216-001-00	METAL, CHIP 10 5% 1/10W

R209	1-216-001-00	METAL, CHIP 10 5% 1/10W
R210	1-216-001-00	METAL, CHIP 10 5% 1/10W
R211	1-216-001-00	METAL, CHIP 10 5% 1/10W
R212	1-216-001-00	METAL, CHIP 10 5% 1/10W
R213	1-216-001-00	METAL, CHIP 10 5% 1/10W

R214	1-216-001-00	METAL, CHIP 10 5% 1/10W
R215	1-216-001-00	METAL, CHIP 10 5% 1/10W
R216	1-216-001-00	METAL, CHIP 10 5% 1/10W
R217	1-216-001-00	METAL, CHIP 10 5% 1/10W
R218	1-216-001-00	METAL, CHIP 10 5% 1/10W

R219	1-216-001-00	METAL, CHIP 10 5% 1/10W
R220	1-216-001-00	METAL, CHIP 10 5% 1/10W
R221	1-216-001-00	METAL, CHIP 10 5% 1/10W
R222	1-216-001-00	METAL, CHIP 10 5% 1/10W
R223	1-216-001-00	METAL, CHIP 10 5% 1/10W

R224	1-216-001-00	METAL, CHIP 10 5% 1/10W
R225	1-216-001-00	METAL, CHIP 10 5% 1/10W
R226	1-216-001-00	METAL, CHIP 10 5% 1/10W
R227	1-216-001-00	METAL, CHIP 10 5% 1/10W
R228	1-216-001-00	METAL, CHIP 10 5% 1/10W

R229	1-216-001-00	METAL, CHIP 10 5% 1/10W
R230	1-216-001-00	METAL, CHIP 10 5% 1/10W
R231	1-216-001-00	METAL, CHIP 10 5% 1/10W
R232	1-216-001-00	METAL, CHIP 10 5% 1/10W
R233	1-216-001-00	METAL, CHIP 10 5% 1/10W

R234	1-216-001-00	METAL, CHIP 10 5% 1/10W
R235	1-216-001-00	METAL, CHIP 10 5% 1/10W
R236	1-216-001-00	METAL, CHIP 10 5% 1/10W
R237	1-216-001-00	METAL, CHIP 10 5% 1/10W
R238	1-216-001-00	METAL, CHIP 10 5% 1/10W

R239	1-216-001-00	METAL, CHIP 10 5% 1/10W
R240	1-216-001-00	METAL, CHIP 10 5% 1/10W
R241	1-216-001-00	METAL, CHIP 10 5% 1/10W
R301	1-216-295-91	METAL CHIP 0 5% 1/10W
R302	1-216-295-91	METAL CHIP 0 5% 1/10W

R303	1-216-295-91	METAL CHIP 0 5% 1/10W
R304	1-216-295-91	METAL CHIP 0 5% 1/10W
R305	1-216-295-91	METAL CHIP 0 5% 1/10W
R306	1-216-295-91	METAL CHIP 0 5% 1/10W
R307	1-216-295-91	METAL CHIP 0 5% 1/10W

R308	1-216-295-91	METAL CHIP 0 5% 1/10W
R309	1-216-295-91	METAL CHIP 0 5% 1/10W
R310	1-216-295-91	METAL CHIP 0 5% 1/10W
R311	1-216-295-91	METAL CHIP 0 5% 1/10W
R312	1-216-295-91	METAL CHIP 0 5% 1/10W

R313	1-216-295-91	METAL CHIP 0 5% 1/10W
R314	1-216-295-91	METAL CHIP 0 5% 1/10W
R315	1-216-295-91	METAL CHIP 0 5% 1/10W
R316	1-216-295-91	METAL CHIP 0 5% 1/10W
R317	1-216-295-91	METAL CHIP 0 5% 1/10W

(FMY-15 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R318	1-216-295-91	METAL CHIP 0 5% 1/10W
R319	1-216-295-91	METAL CHIP 0 5% 1/10W
R320	1-216-295-91	METAL CHIP 0 5% 1/10W
R321	1-216-295-91	METAL CHIP 0 5% 1/10W
R322	1-216-295-91	METAL CHIP 0 5% 1/10W

R323	1-216-295-91	METAL CHIP 0 5% 1/10W
R324	1-216-295-91	METAL CHIP 0 5% 1/10W
R325	1-216-295-91	METAL CHIP 0 5% 1/10W
R326	1-216-295-91	METAL CHIP 0 5% 1/10W
R327	1-216-295-91	METAL CHIP 0 5% 1/10W

R328	1-216-295-91	METAL CHIP 0 5% 1/10W
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<CRYSTAL>

X101	1-579-907-21	VIBRATOR, CERAMIC
X102	1-579-906-21	RESONATOR, CERAMIC 24MHz

IF-33 BOARD

Ref. No. or Q'ty	Part No.	SP Description
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1pc	1-654-971-11	PRINTED CIRCUIT BOARD, IF-33
1pc	3-179-084-01	LEVER (R), PC BOARD
1pc	3-683-180-01	PANEL, IF
2pcs	7-685-871-01	SCREW +BVT 3X6 (S)

<CAPACITOR>

C100	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C102	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C104	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C105	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C200	1-163-038-91	CERAMIC, CHIP 0.1uF 25V

C202	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C204	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C206	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C300	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C302	1-163-038-91	CERAMIC, CHIP 0.1uF 25V

C304	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C309	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C311	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C313	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C400	1-163-038-91	CERAMIC, CHIP 0.1uF 25V

C401	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C402	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C450	1-163-275-11	CERAMIC 0.001uF 5% 50V
C451	1-163-251-11	CERAMIC, CHIP 100PF 5% 50V
C452	1-135-155-21	TANTALUM, CHIP 4.7uF 10% 16V

C453	1-135-155-21	TANTALUM, CHIP 4.7uF 10% 16V
C454	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C456	1-135-155-21	TANTALUM, CHIP 4.7uF 10% 16V
C457	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C500	1-163-038-91	CERAMIC, CHIP 0.1uF 25V

C503	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C505	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C600	1-163-038-91	CERAMIC, CHIP 0.1uF 25V
C601	1-126-391-11	ELECT, CHIP 47uF 20% 6.3V

(IF-33 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
<CONNECTOR>		
CN101	1-569-465-11	o PIN, DIN CONNECTOR (DIP) 48P
CN102	1-770-210-11	o RECEPTACLE, ANPHENOL 50P
CN103	1-770-210-11	o RECEPTACLE, ANPHENOL 50P

<DIODE>

D400	8-719-975-33	s DIODE RB110C-T101
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<IC>

IC100	8-759-926-21	s IC SN74HC161ANS
IC101	8-759-926-21	s IC SN74HC161ANS
IC102	8-759-926-21	s IC SN74HC161ANS
IC103	8-759-926-21	s IC SN74HC161ANS
IC104	8-759-327-82	s IC HMT2256ALF8EL

IC105	8-759-926-49	s IC SN74HC245ANS
IC106	8-759-926-49	s IC SN74HC245ANS
IC200	8-759-926-21	s IC SN74HC161ANS
IC201	8-759-926-21	s IC SN74HC161ANS
IC202	8-759-926-21	s IC SN74HC161ANS

IC203	8-759-926-21	s IC SN74HC161ANS
IC204	8-759-327-82	s IC HMT2256ALF8EL
IC205	8-759-926-49	s IC SN74HC245ANS
IC206	8-759-926-49	s IC SN74HC245ANS
IC300	8-759-327-83	s IC HD6433228A69F

IC301	8-759-926-11	s IC SN74HC138ANS
IC302	8-759-327-82	s IC HMT2256ALF8EL
IC303	8-759-926-05	s IC SN74HC125ANS
IC304	8-759-926-48	s IC SN74HC244ANS
IC305	8-759-926-48	s IC SN74HC244ANS

IC306	8-759-239-23	s IC TC74HC86AF
IC307	8-759-925-85	s IC SN74HC32ANS
IC308	8-759-925-85	s IC SN74HC32ANS
IC309	8-759-925-90	s IC SN74HC74ANS
IC310	8-759-925-74	s IC SN74HC04ANS

IC311	8-759-926-98	s IC SN74HC4040ANS
IC312	8-759-926-98	s IC SN74HC4040ANS
IC313	8-759-926-67	s IC SN74HC374ANS
IC315	8-759-926-48	s IC SN74HC244ANS
IC316	8-759-925-76	s IC SN74HC08ANS

IC400	8-752-356-36	s IC CXD1185CQ
IC401	8-759-925-90	s IC SN74HC74ANS
IC402	8-759-925-90	s IC SN74HC74ANS
IC403	8-759-327-81	s IC DS21S07AE
IC404	8-759-327-81	s IC DS21S07AE

IC500	8-759-926-21	s IC SN74HC161ANS
IC501	8-759-926-18	s IC SN74HC157ANS
IC502	8-759-926-18	s IC SN74HC157ANS
IC503	8-759-926-18	s IC SN74HC157ANS
IC504	8-759-927-46	s IC SN74HC00ANS

IC505	8-759-925-85	s IC SN74HC32ANS
IC506	8-759-925-85	s IC SN74HC32ANS

<COIL>

L600	1-424-653-11	s COIL, CHOKE 10UH
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<RESISTOR>

R301	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R302	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W

(IF-33 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R303	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R304	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R305	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R306	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R307	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R308	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R309	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R310	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R311	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R437	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R438	1-216-097-00	s METAL, CHIP 100K 5% 1/10W

<SWITCH>

S300	1-571-780-11	s SWITCH, DIP (4 KEY)
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<CRYSTAL>

X300	1-760-606-21	s RESONATOR, CERAMIC 20MHz
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PACKING MATERIALS & SUPPLIED ACCESSORIES

Ref. No. or Q'ty	Part No.	SP Description
2pcs	3-704-046-31	s BAG, PREVENTION, ELECTRIFICATION
1pc	3-798-137-21	s MANUAL, INSTRUCTION [for EK]
1pc	3-798-137-11	s MANUAL, INSTRUCTION [for UC]
4pcs	7-682-547-04	s SCREW +B 3X6

SECTION 6 CIRCUIT OPERATION DESCRIPTION

6-1. IF-33 BOARD CIRCUIT OPERATION DESCRIPTION

6-1-1. Outline

SCSI board is equipped following function.

Control of SCSI

Serial communication with SY-12 board

Data transmission of bus

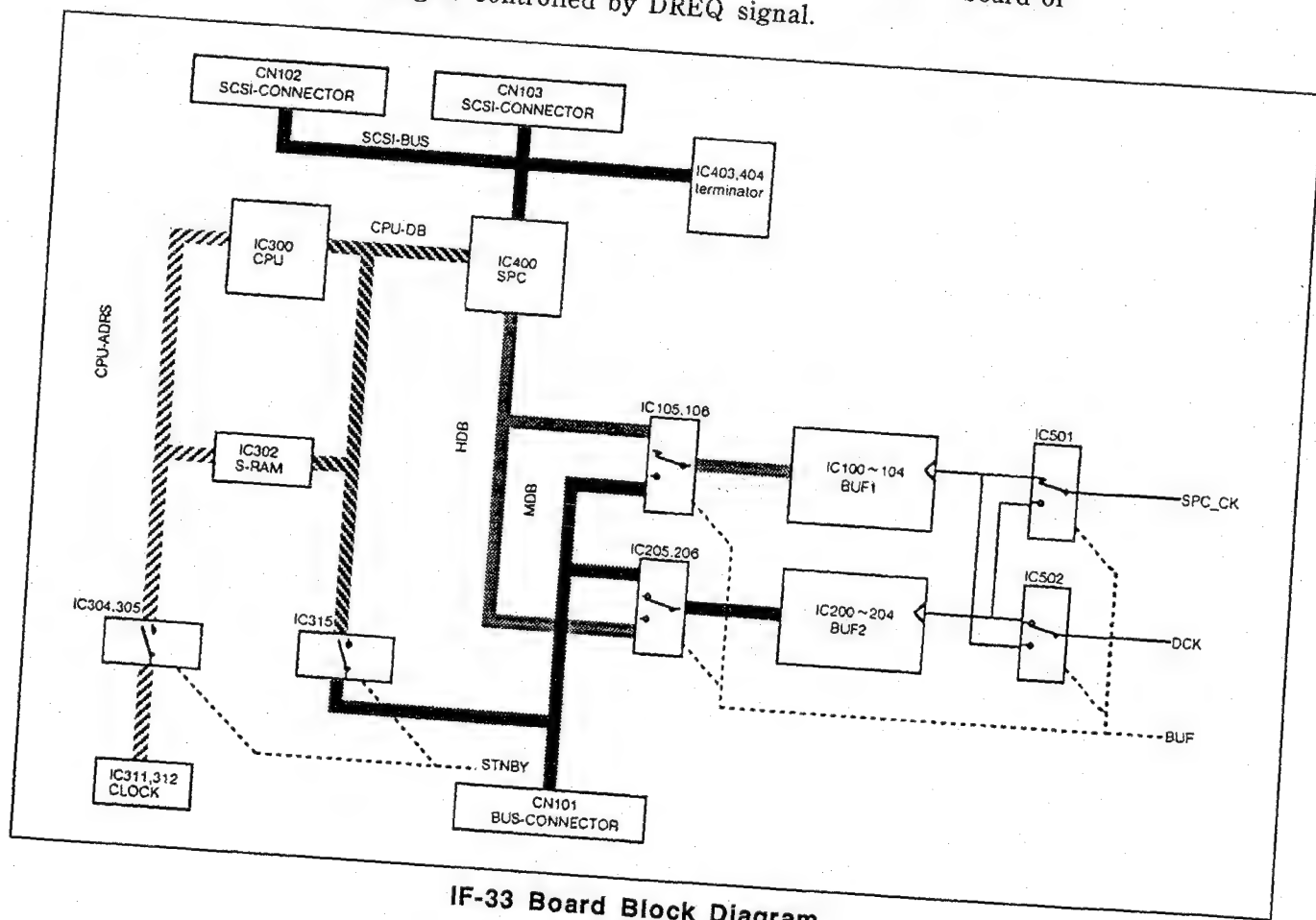
Generation of test pattern

This board is composed CPU peripheral, SPC peripheral and double buffer peripheral.

CPU performs command of SCSI, command interpretation of serial communication, control of various timings and generation of DCK and so on.

Image data from SPC uses S-RAM of IC104, 204 as double buffer. Reading and writing are performed alternately. And is fed to FMY-15 board or SY-12 board.

In case reading from FMY-15 board, operation becomes reverse, and is fed to SPC. In SPC side, this timing is controlled by DMA function, and in FMY-15 board or SY-12 board side, this timing is controlled by DREQ signal.



IF-33 Board Block Diagram

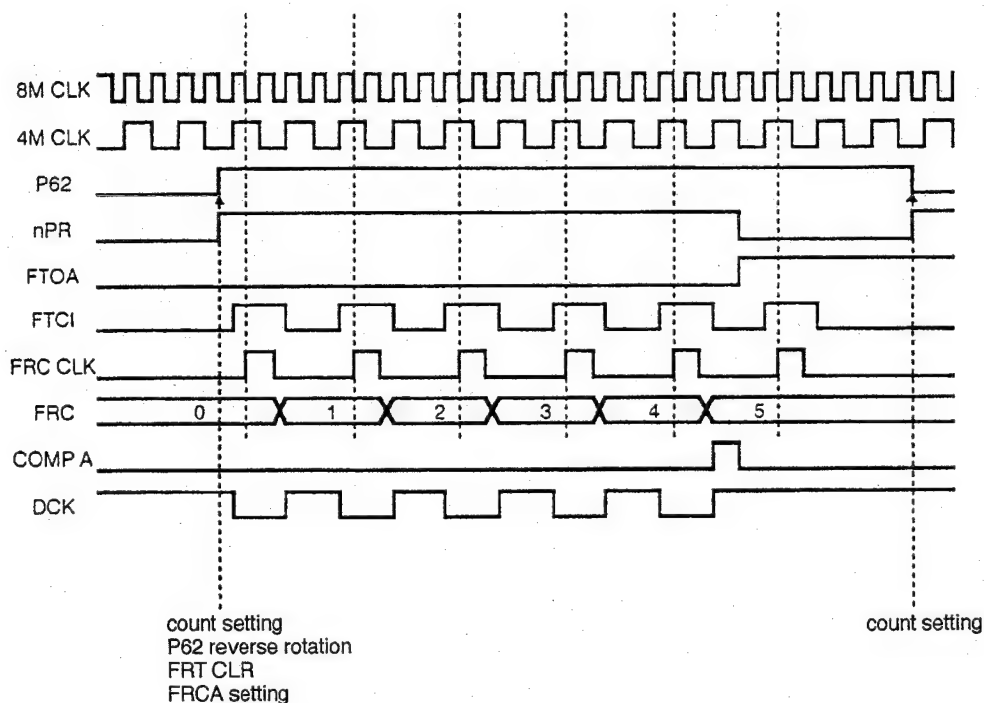
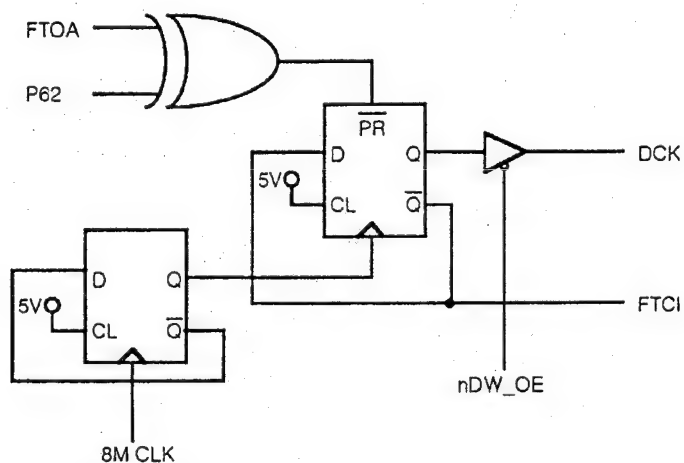
6-1-2. CPU Peripheral

CPU is used H8/322. Firmware is stored at ROM on the SY-12 board. When turning on the power, Firmware pass through data bus and is transmitted to IC302 (256Kbit S-RAM). This RAM also can be read and write by CPU on this board. And this RAM is used as work area except program territory.

As a special function, data transmission clock to SY-12 board is generated. This is performed by using 16bit counter including the CPU. Sequence of timing generation is as follows.

16bit counter starts by reversing P62, when approaching the setting counter value from CPU, FTOA rotates reversely.

DCK of regulation quantity is generated by controlling the output period of clock using these two signal.



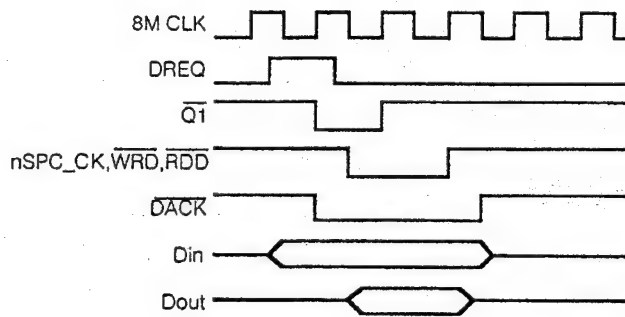
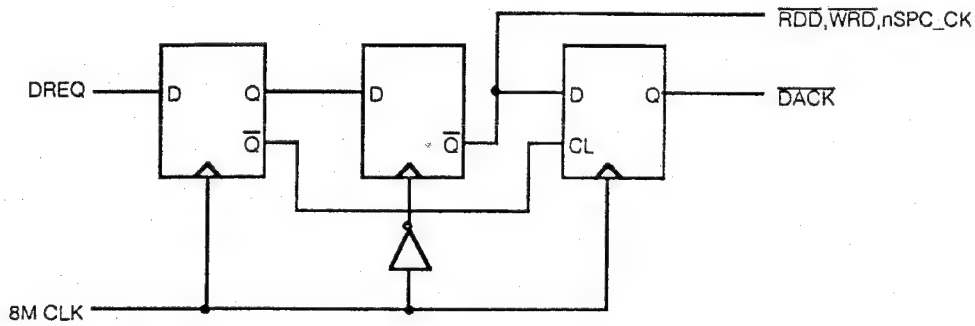
DCK Generation Timing

6-1-3. SPC Peripheral

SPC is used CXD1185CQ. Transmission of data is used DMA function of SPC. DMA controller is composed by DREQ or DACK signal.

Transmission speed is 2.6MHz at maximum synchronous transmission, 4MHz at maximum asynchronous transmission.

Timing of transmission is as follows.



SPC DREQ,DACK Timing

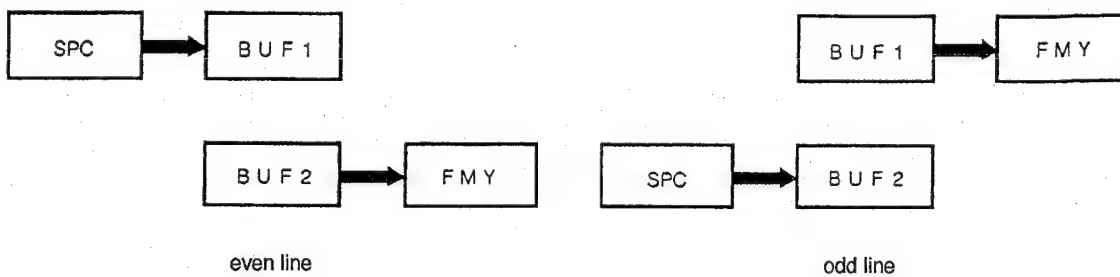
6-1-4. Double Buffer Peripheral

Double buffer peripheral controls transmission of SPC→Buffer and Buffer→Internal buss. Transmission of SPC→buffer is controlled by SPC, transmission of buffer→internal buss is controlled by CPU or DREQ signal from other board.

Dot sequence data is changed to line sequence data when writing in this buffer, and is transmitted.

BUF1 and BUF2 of buffer is used alternately, transmission is performed efficiently.

Double buffer operation of SEND IMAGE DATA is as follows.



6-2. FMY-15 BOARD CIRCUIT OPERATION DESCRIPTION

6-2-1. Outline

Main function of this board is as follows.

- Picture data receiving from IF-33 board.
- Picture data transmission to IF-33 board.
- Printing data transmission to SY-12 board.
- Conversion (color pallet, masking) from picture data to printing data.

6-2-2. CPU Peripheral Section

One of this unit feature is concentration of program ROM. So this board has S-RAM instead of program ROM. When turning ON the power, nSTROBE signal as clock, program is transmitted from SY-12 board. This nSTROBE signal is used WR signal of S-RAM IC110. The other side, nSTROBE signal is input to counter IC111, 112 and makes address. Details are refer to SY-12 board circuit operation description.

Serial transmission to SY-12 board is used asynchronous transmission including in CPU IC109. Data transmission format is

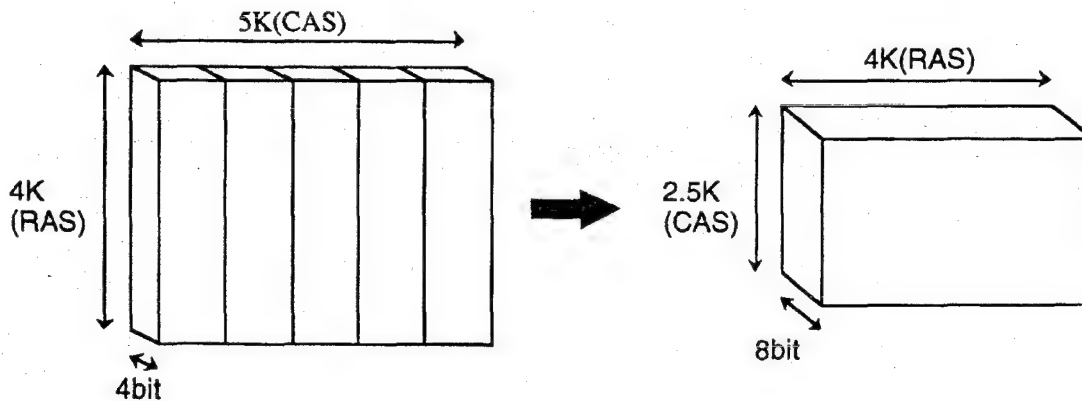
Data : 8bit
Stop bit : 1bit
Parity : none
Baud rate : 31250bps

Details are refer to SY-12 board circuit operation description.

6-2-3. Memory Peripheral Section

Memory peripheral section is composed by gate arrey (IC200) of memory control and D-RAM (IC201 to 205, ME-6 board IC211 to 215, 221 to 225).

Memory space is composed by five 16Mbit D-RAMs $4096(\text{RAS}) \times 5120(\text{CAS}) \times 4\text{bit}$. Truly, it use to consider $4096 \times 2560 \times 8\text{bit}$ by placing 8bit data to each 4bit toward CAS direction. This means one color memory space. This $8\text{bit} \leftrightarrow 4\text{bit}$ conversion is performed at memory control gate arrey IC200.



True memory space (one aspect)

Relative memory space (one aspect)

FMY-15 board has one color memory, and by adding ME-6 board, it becomes three colors memory. At that time, IC201 to 205 are RED ch, IC211 to 215 are GREEN ch, IC221 to 225 are BLUE ch.

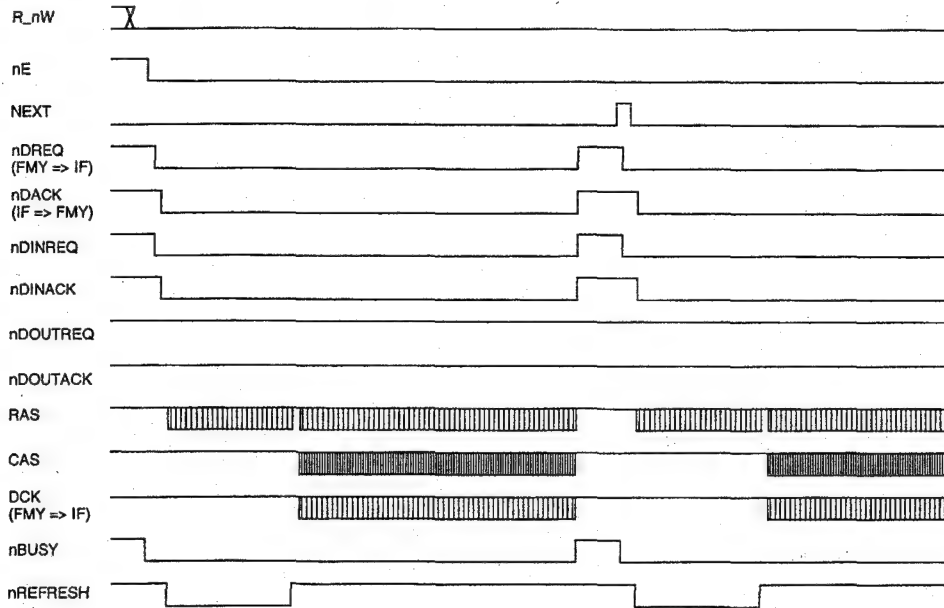
6-2-4. Picture Data Receiving from IF-33 Board

At this time, picture data is distributed from CN201 to IC106, 107, 108, via IC200 and is fed to D-RAM. The transmission speed of picture data is 4MHz.

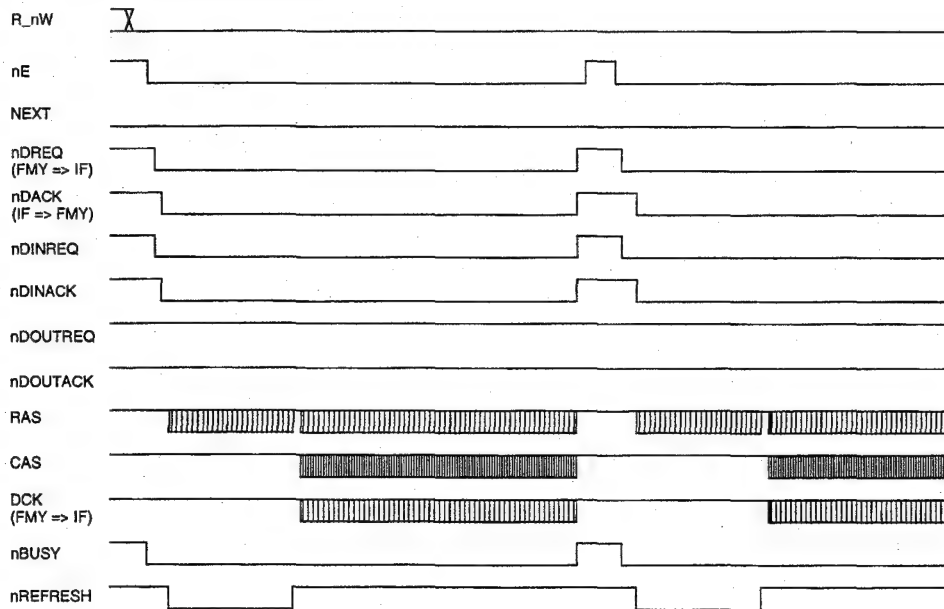
In case aspect sequential, DMA is performed at every aspect by using NEXT signal.

In case dot sequential, DMA is repeated every one line, R, G, B, R, G, B.....

Aspect sequential transmission



Dot sequential transmission

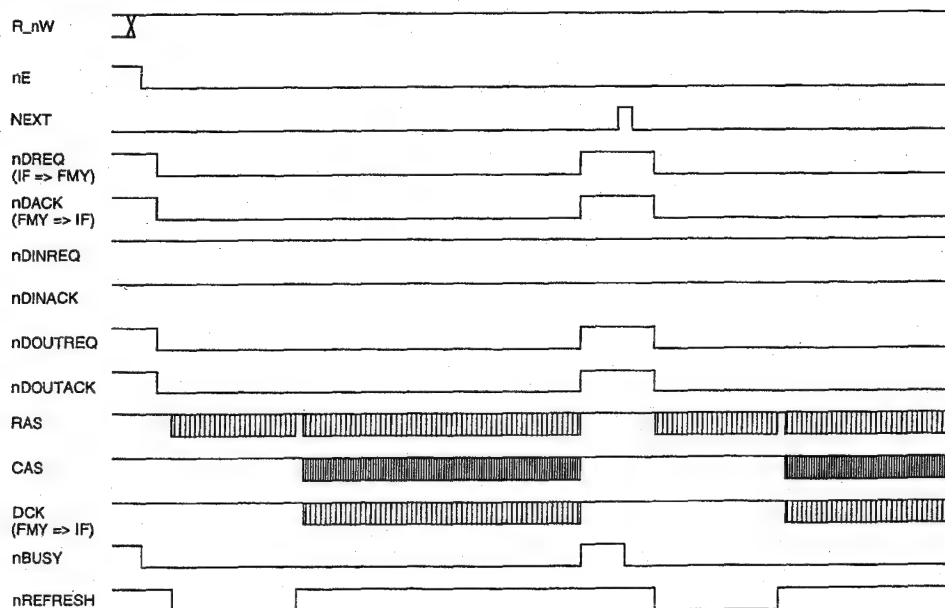


6-2-5. Picture Data Transmission to IF-33 Board

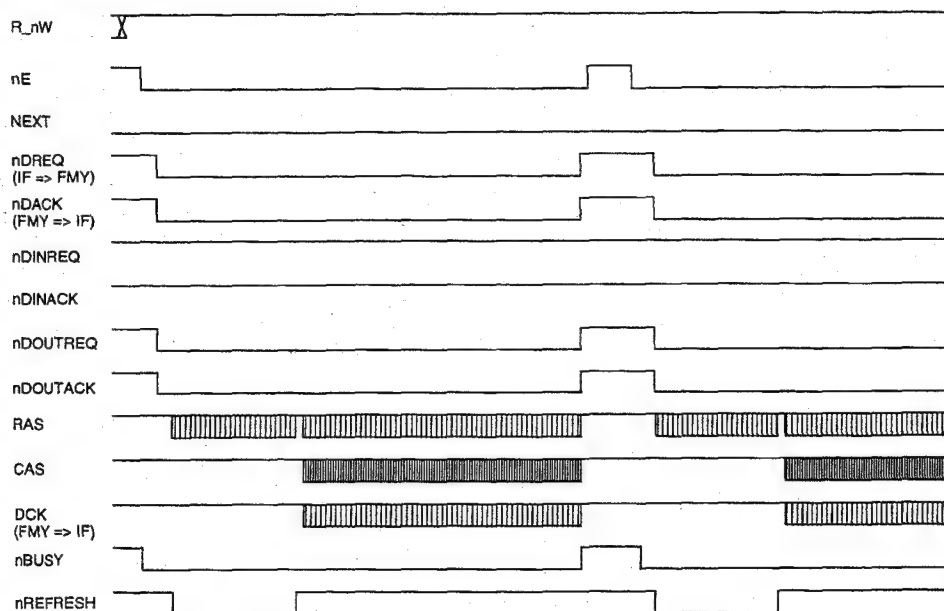
At this time, picture data is fed from D-RAM via IC200. And selected one channel from IC106, 107, 108. And is fed from CN201. The transmission speed of picture data is 4MHz.

In case aspect sequential, DMA is performed at every aspect by using NEXT signal. In case dot sequential, DMA is repeated every one line, R, G, B, R, G, B.....

Aspect sequential transmission

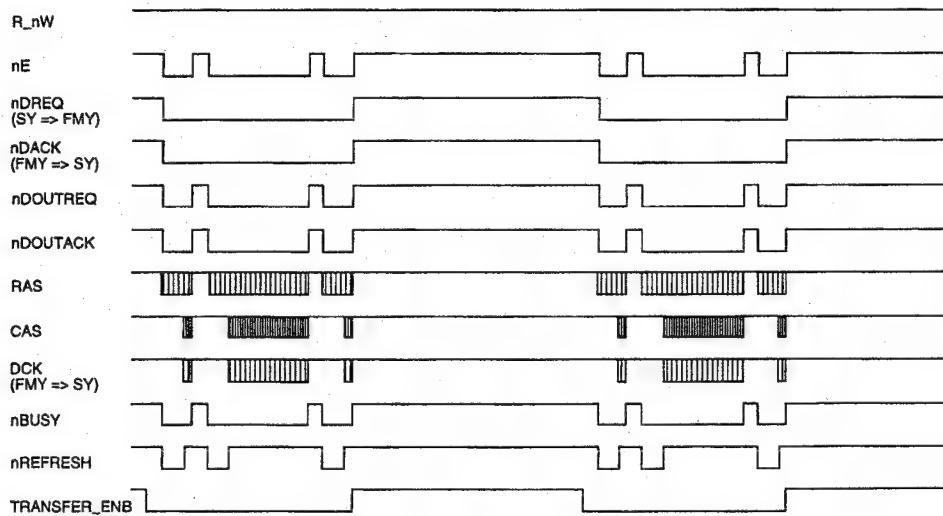


Dot sequential transmission



6-2-6. Printing Data Transmission to SY-12 Board

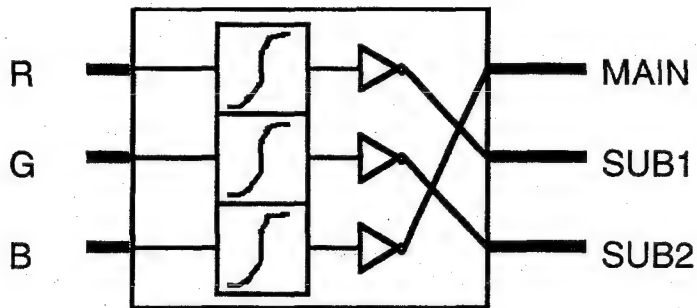
At this time, picture data is fed from D-RAM via IC200. And is passed through COLOR PALETTE IC IC102, MASKING ROM IC103, 104, D-FF IC105. And is fed from CN201. The transmission speed of printing data is 2MHz.



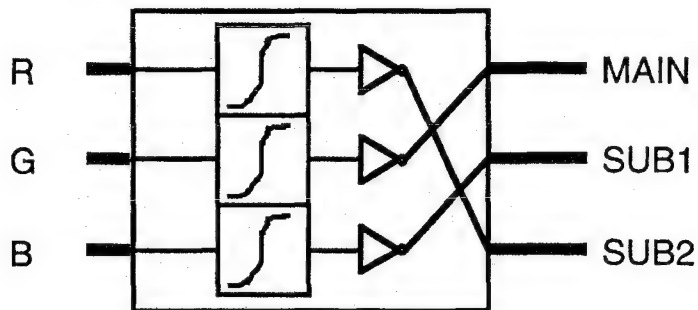
Color adjustment and development of palette data (8bit data) are performed at COLOR PALETTE IC (IC102). MAIN, SUB1, SUB2 data are coincide printing ribbon colors and are set each 8bit data. And data is fed to masking ROM. Function of IC102 is as follows.

◆ 30Mbyte memory (When ME-6 adding) in case RGB data

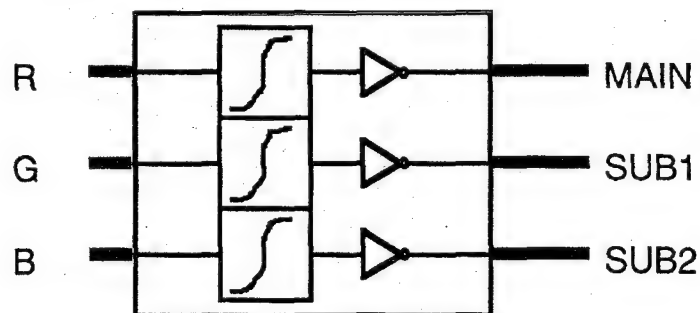
Y Printing



M Printing



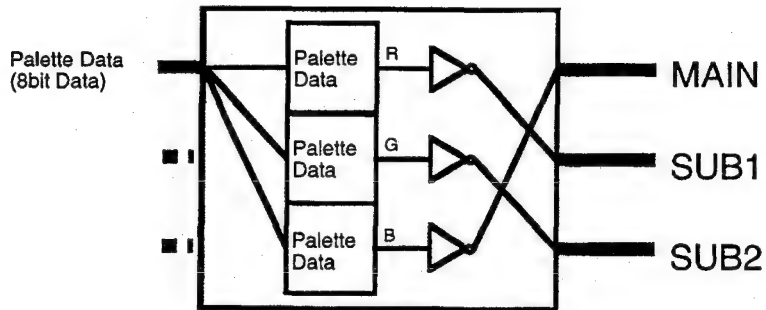
C Printing



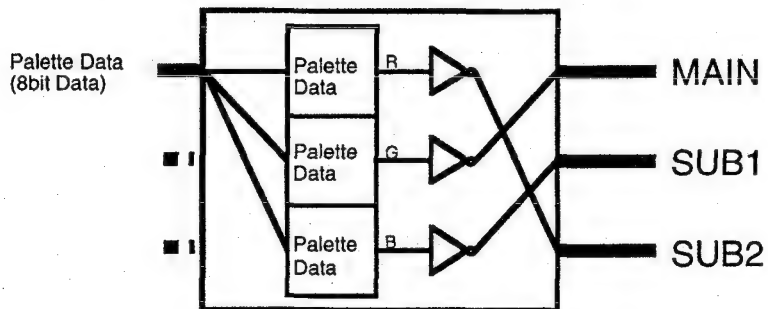
In case B/W ribbon, it is same as magenta printing.

◆ 10Mbyte memory In case CMY data

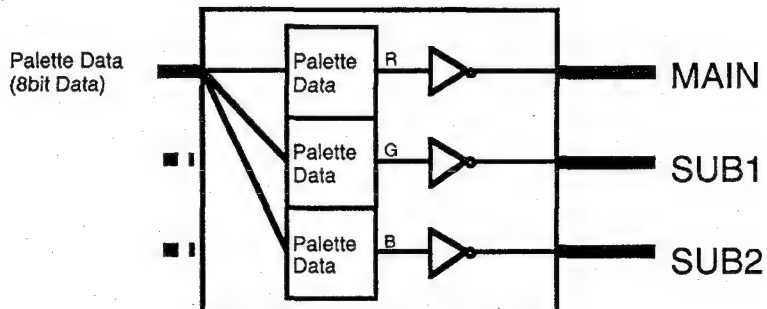
Y Printing



M Printing



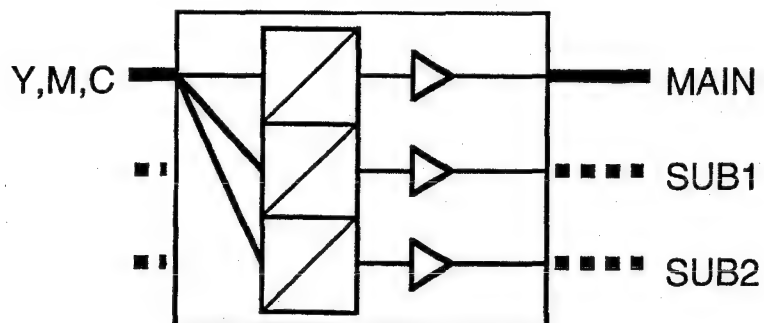
C Printing



In case B/W ribbon, it is same as magenta printing.

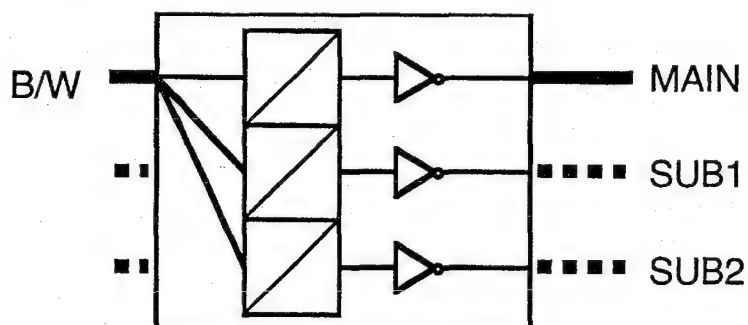
◆ In case palette data (8bit data)

Regardless of ribbon color, palette data is as follows. At this time, MAIN data is output without masking.

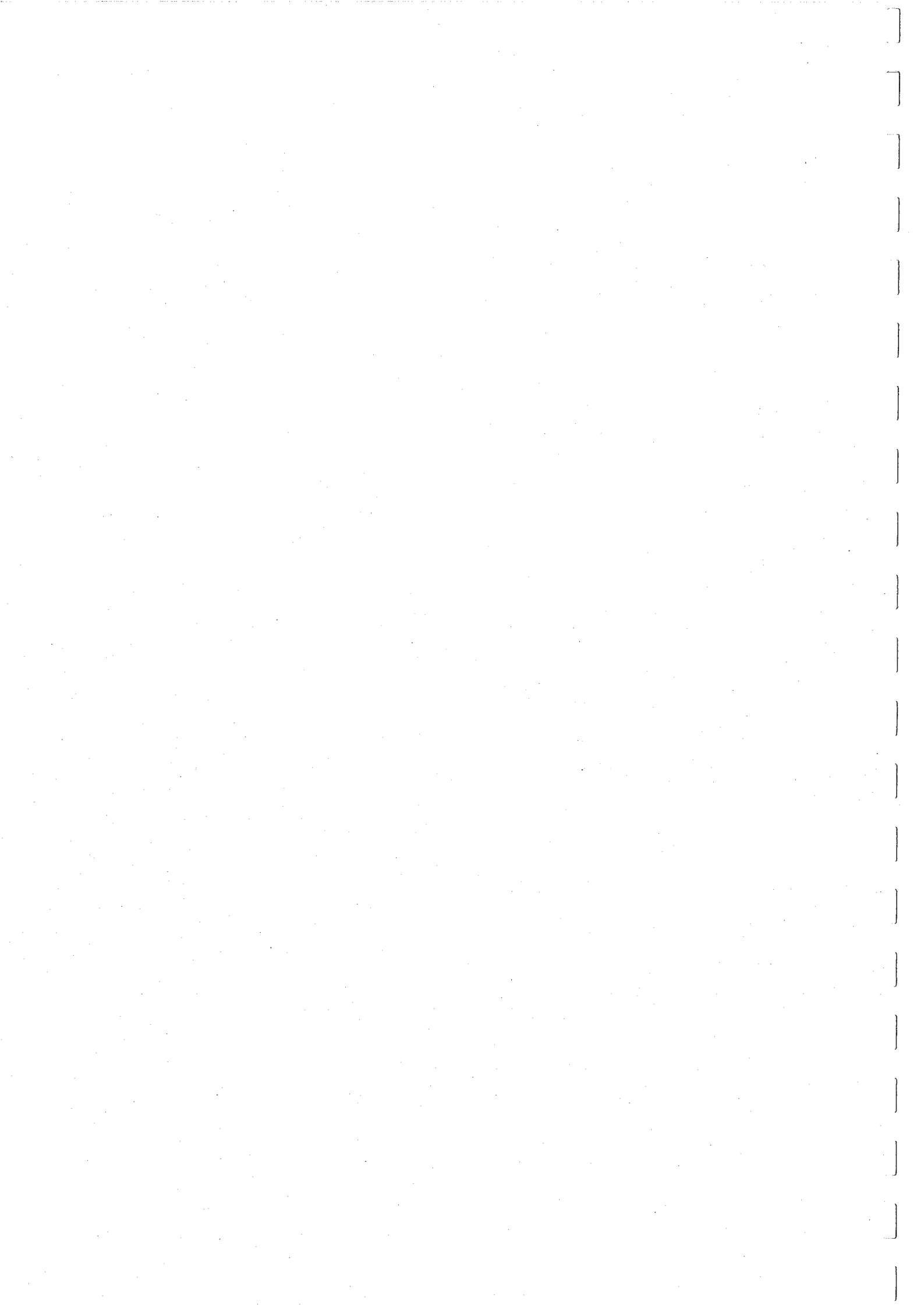


◆ In case B/W data

Regardless of ribbon color, palette data is as follows. At this time, MAIN data is output without masking.



Masking ROM is composed two stages, main ROM (IC104) 8Mbit and sub ROM (IC103) 2Mbit.

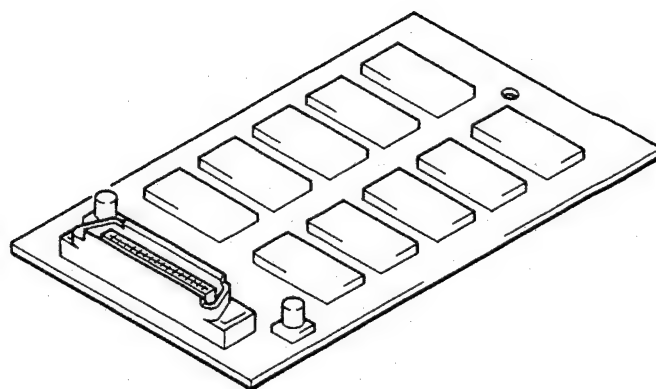


SONY®


ADD-ON MEMORY KIT

UPK-8801

SERVICE MANUAL



SAFETY RELATED COMPONENT WARNING

Components identified by shading and  marked on the schematic diagrams and parts list are critical to safe operation. Replace these components with SONY parts whose part numbers appear as shown in this manual or in supplements published by SONY.

SECTION 1 GENERAL

1-1. OVERVIEW

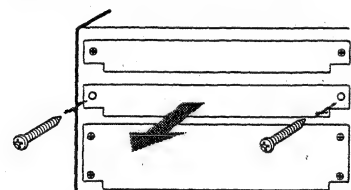
The UPK-8801 is an optional add-on memory expansion card for use with the Sony UP-D8800 digital color printer. This card installs on the memory board of the UPK-8800SC SCS I Interface Kit (sold separately) increasing the printer memory from 10 to 30 MB.

1-2. INSTALLATION

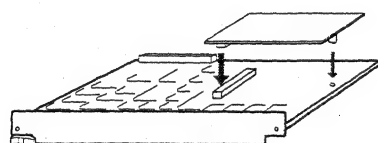
Caution:

Turn off the UP-D8800 and unplug its power cable before installing the card.

- 1 Remove the two screws affixing the memory board in its expansion slot in back of the UP-D8800, and remove the board.



- 2 Plug in the memory expansion card.



- 3 Replace the memory board in its expansion slot in the UP-D8800 as it was before, and replace the two mounting screws removed in step 1.

1-3. SPECIFICATIONS

Memory capacity: 20 MB

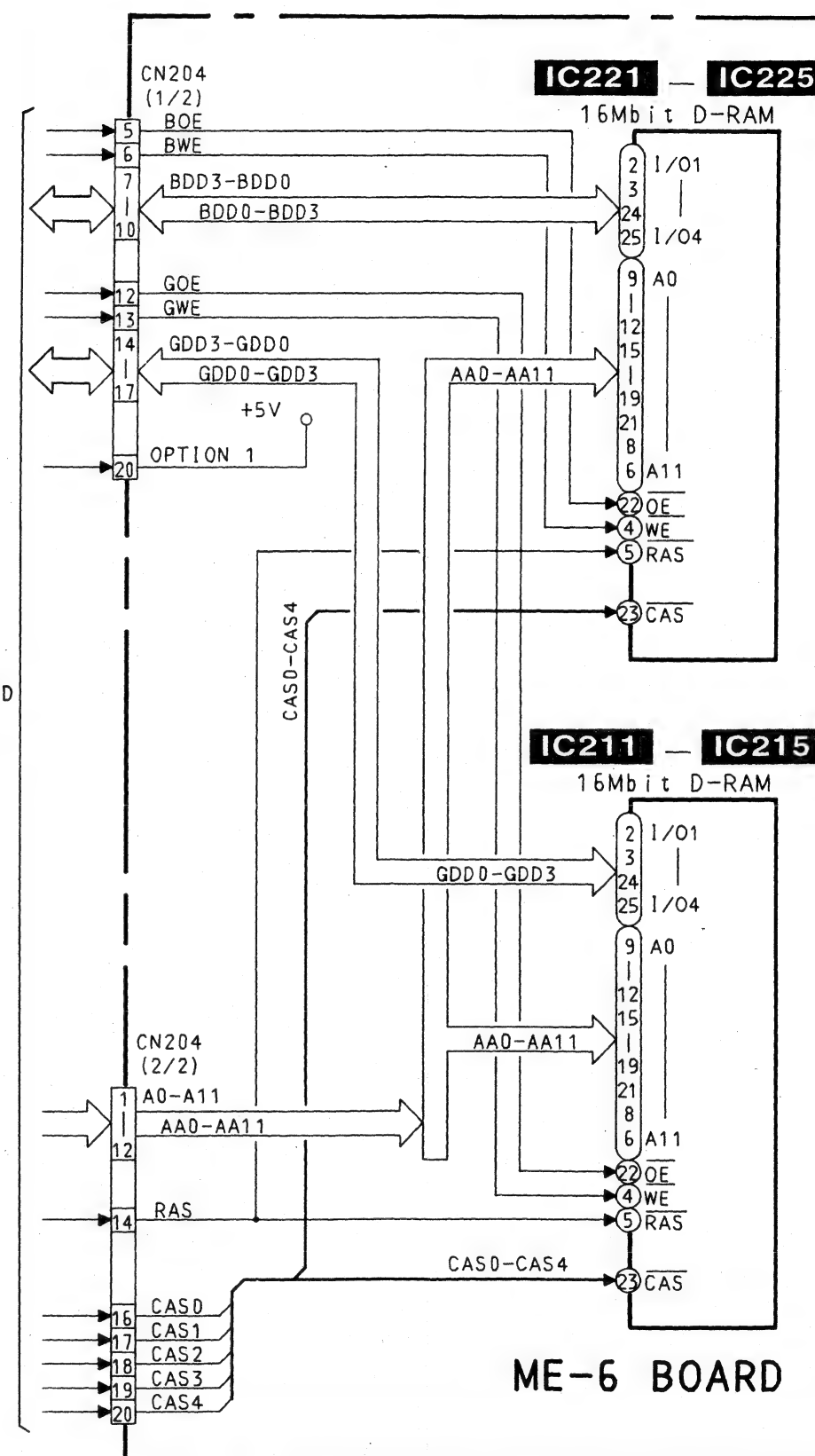
Design and specifications are subject to change without notice.

This section is extracted from instruction manual.

SECTION 2 DIAGRAMS

2-1. ADD-ON MEMORY BLOCK DIAGRAM

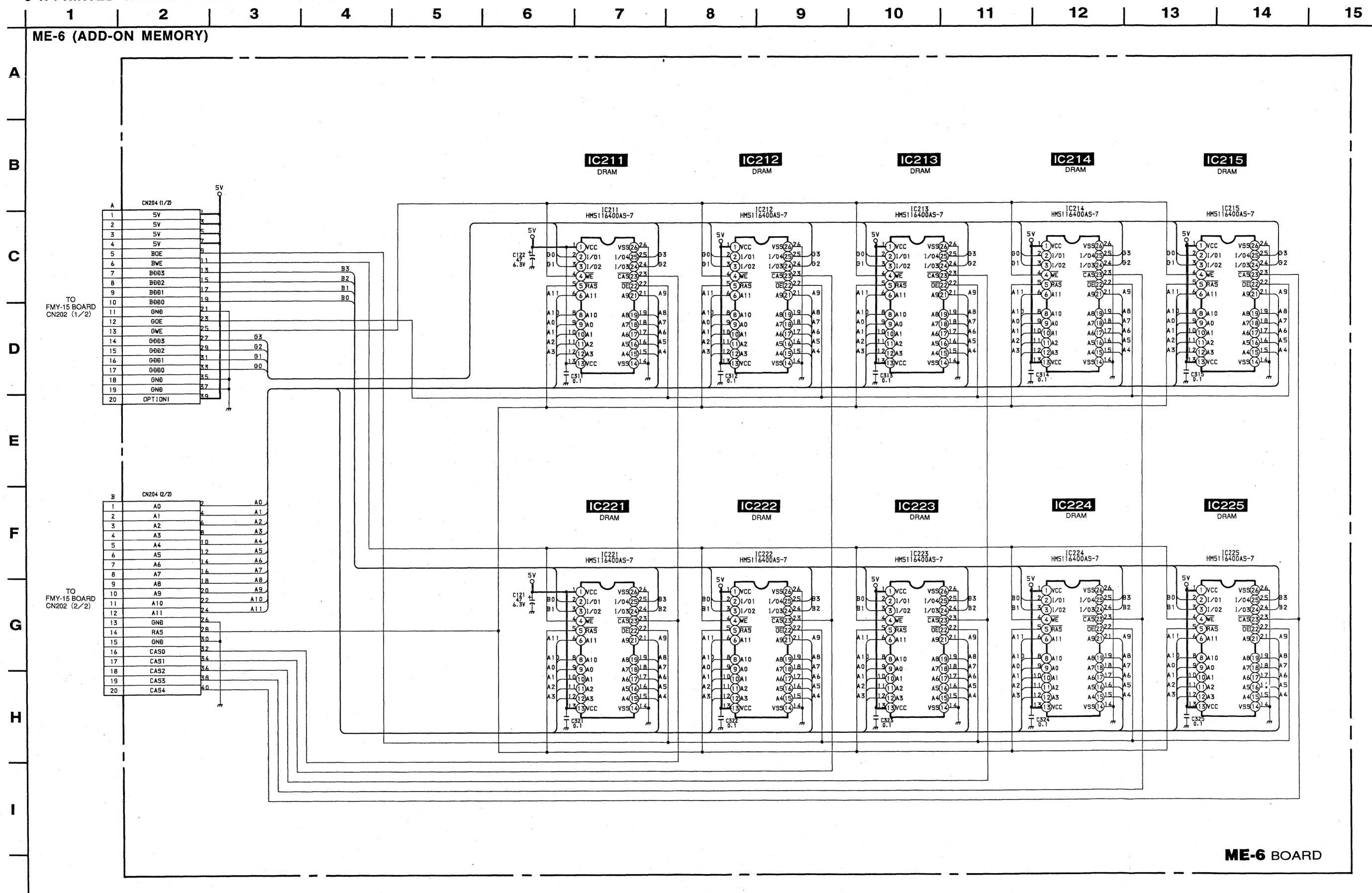
TO
FMY-15 BOARD
CN202
(UPK-8800SC)



SECTION 3

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

3-1. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS



FRAME MEMORY

FRAME MEMORY

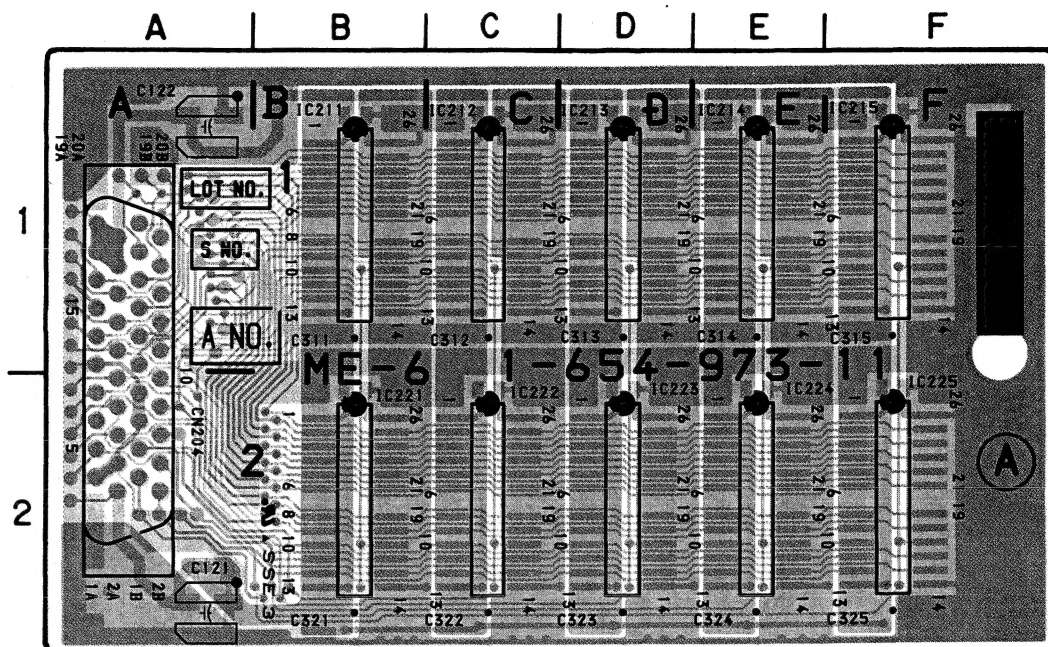
ME-6

ME-6

ME-6 (ADD-ON MEMORY)

ME-6 BOARD

CN204	A-2
IC211	B-1
IC212	C-1
IC213	D-1
IC214	E-1
IC215	F-1
IC221	B-2
IC222	C-2
IC223	D-2
IC224	E-2
IC225	F-2




ME-6 -COMPONENT SIDE-
1-654-973-11

SECTION 4 EXPLODED VIEW


NOTE:

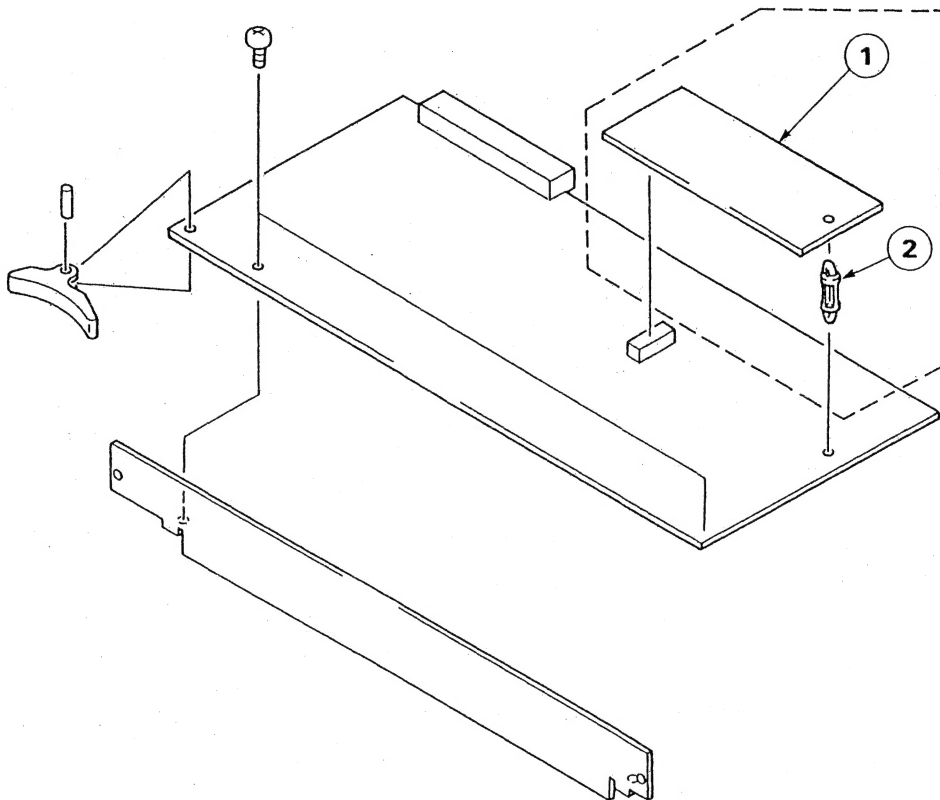
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

Items marked "O" in the SP column are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark  are critical for safety.
Replace only with part number specified.

4-1. UPK-8801 (Option)

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



No.	Part No.	SP Description
1	1-654-973-11	o PRINTED CIRCUIT BOARD, ME-6
2	3-682-419-11	o HOLDER, P. C. B

SECTION 5 ELECTRICAL PARTS LIST

NOTE:

- Items marked "O" in the SP column are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- All variable and adjustable resistors have characteristic curve B, unless otherwise stated.

When indicating part by reference number, please include the board name.

RESISTORS

- All resistors are in ohms.
- F: non-flammable

CAPACITORS

- MF: μ F, PF: μ μ F

COILS

- MMH: mH, UH: μ H

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

ME-6 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-654-973-11	o PRINTED CIRCUIT BOARD, ME-6

<CAPACITOR>

C121	1-126-391-11	s ELECT, CHIP 47 μ F 20% 6.3V
C122	1-126-391-11	s ELECT, CHIP 47 μ F 20% 6.3V
C311	1-163-038-91	s CERAMIC, CHIP 0.1 μ F 25V
C312	1-163-038-91	s CERAMIC, CHIP 0.1 μ F 25V
C313	1-163-038-91	s CERAMIC, CHIP 0.1 μ F 25V

C314	1-163-038-91	s CERAMIC, CHIP 0.1 μ F 25V
C315	1-163-038-91	s CERAMIC, CHIP 0.1 μ F 25V
C321	1-163-038-91	s CERAMIC, CHIP 0.1 μ F 25V
C322	1-163-038-91	s CERAMIC, CHIP 0.1 μ F 25V
C323	1-163-038-91	s CERAMIC, CHIP 0.1 μ F 25V

C324	1-163-038-91	s CERAMIC, CHIP 0.1 μ F 25V
C325	1-163-038-91	s CERAMIC, CHIP 0.1 μ F 25V

<CONNECTOR>

CN204	1-770-208-11	o CONNECTOR, BOARD TO BOARD 40P
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<IC>

IC211	8-759-332-65	s IC HM5116400AS7GSEL
IC212	8-759-332-65	s IC HM5116400AS7GSEL
IC213	8-759-332-65	s IC HM5116400AS7GSEL
IC214	8-759-332-65	s IC HM5116400AS7GSEL
IC215	8-759-332-65	s IC HM5116400AS7GSEL

IC221	8-759-332-65	s IC HM5116400AS7GSEL
IC222	8-759-332-65	s IC HM5116400AS7GSEL
IC223	8-759-332-65	s IC HM5116400AS7GSEL
IC224	8-759-332-65	s IC HM5116400AS7GSEL
IC225	8-759-332-65	s IC HM5116400AS7GSEL

SUPPLIED ACCESSORIES

Ref. No. or Q'ty	Part No.	SP Description
2pcs	3-682-419-11	o HOLDER, P.C.B
1pc	3-798-038-11	s MANUAL, INSTRUCTION